THE ADOPTION OF HERBAL COSMETIC PRODUCTS A CASE STUDY OF THE HERBAL COSMETIC PRODUCTS PRODUCED BY CHAOPHAYA ABHAIBHUBEJHR HOSPITAL IN PRACHINBURI PROVINCE

DANSROUNG WANNAWONGSOUN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS (ENVIRONMENT)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2001

ISBN 974 – 04 – 0663 – 7

Thesis
entitled

THE ADOPTION OF HERBAL COSMETIC PRODUCTS A CASE STUDY OF THE HERBAL COSMETIC PRODUCTS PRODUCED BY CHAOPHAYA ABHAIBHUBEJHR HOSPITAL IN PRACHINBURI PROVINCE

.....
Mr. Dansroung Wannawongsoun
Candidate

.....
Assoc. Prof. Jiraporn Chuckpaiwong,
B.A., M.A.
Major – Advisor

.....
Asst. Prof. Pannipa Buraphacheep,
LL.B.(2nd Class Hons.), LL.M.
Co – advisor

.....
Asst. Prof. Shutima Saengngern,
B.A., M.A.
Co – advisor

.....
Prof. Liangchai Limlomwongse,
Ph.D.
Dean
Faculty of Graduate Studies

.....
Assoc. Prof. Thawatchai Arthonthurasook,
B.Sc., M.P.A.
Chairman
Master of Arts Programme in Environment
Faculty of Social Sciences and Humanities

Thesis
entitled

THE ADOPTION OF HERBAL COSMETIC PRODUCTS A CASE STUDY OF THE HERBAL COSMETIC PRODUCTS PRODUCED BY CHAOPHAYA ABHAIBHUBEJHR HOSPITAL IN PRACHINBURI PROVINCE

Was submitted to Faculty of Graduate Studies, Mahidol University
For the degree of Master of Arts (Environment)
on

September 21, 2001

.....
Mr. Dansroung Wannawongsoun
Candidate

.....
Assoc. Prof. Jiraporn Chuckpaiwong,
B.A., M.A.
Chairman

.....
Asst. Prof. Pannipa Buraphacheep,
LL.B.(2nd Class Hons.), LL.M.
Member

.....
Assoc. Prof. Boontiumm Khamapirad,
M.D.
Member

.....
Asst. Prof. Shutima Saengngern,
B.A., M.A.
Member

.....
Prof. Liangchai Limlomwongse,
Ph.D.
Dean
Faculty of Graduate Studies
Mahidol University

.....
Assoc. Prof. Suree Kanjanawong,
Ph.D.
Dean
Faculty of Social Sciences and Humanities
Mahidol University

ACKNOWLEDGEMENT

I would like to express my sincere gratitude and deep appreciation to Assoc. Prof. Jiraporn Chuckpaiwong, Asst. Prof. Pannipa Buraphacheep, Asst. Prof. Shutima Saengngern , Assoc. Prof. Dr. Boontiumm Khamapirad and Asst. Prof. Tassanee Indrasukhsri for them kindly advice, supervision and encouragement to complete this thesis.

I would like to thank the following Dr. Prem Chinvanthananond, Director of Chaophaya Abhaibhubejhr Hospital, Miss Supaporn Pitiporn, Mr. Chantit Ponyares and all officials of Chaophaya Abhaibhubejhr Hospital for cooperation and support.

I would also like to thank all lecturers and all officials at Faculty of Social Science and Humanities, Mahidol University.

I would like to express my appreciation to Mrs. Wannasri Sawangpol, Mr. & Mrs. Boland, Miss Uttasupa Chalermsiri, Miss Rapeeporn Decha-anuntapong, Miss Supaporn Seneewong Na Ayuthaya and Miss Soithip Weerasoonthon for suggest, edit and review English in this thesis.

I would like to thank to Mr. & Mrs. Pumthip, Mr. & Mrs. Yimsuk, and various people for help to collect data and everything.

I also wish to thank to my parent, my family and Miss Busaba Sawangpol for many things that they did for me during my study and all my life.

I am grateful for the support provides by the Public Health Office of Prachinburi for give my opportunity in this study.

Dansroung Wannawongsoun

4137324 SHEV/M : MAJOR: ENVIRONMENT; M.A. (ENVIRONMENT)

KEYWORDS : ADOPTION / HERBAL / COSMETIC / CHAOPHAYA ABHAIBHUBEJHR HOSPITAL

DANSROUNG WANNAWONGSOUN: THE ADOPTION OF HERBAL COSMETIC PRODUCTS: A CASE STUDY OF THE HERBAL COSMETIC PRODUCTS PRODUCED BY CHAOPHAYA ABHAIBHUBEJHR HOSPITAL IN PRACHINBURI PROVINCE. THESIS ADVISORS: JIRAPORN CHUCKPAIWONG, B.A., M.A., PANNIPA BURAPHACHEEP, LL.B. (2nd Class Hons.), LL.M., SHUTIMA SAENGNGERN, B.A., M.A. 103 p. ISBN 974-04-0663-7

The objectives of the study are to study the level of the adoption of herbal cosmetic products, to study the factors affecting the adoption of herbal cosmetic products, and to study the problems, obstacles and suggestions related to the adoption of herbal cosmetic products. Data was collected by a questionnaire given to 400 people and in-depth interviews with herbal cosmetics producers, registered members of herbal shops, and herbal cosmetics customers. The quantitative research was analyzed by the Statistical Package for the Social Sciences. Data were presented by percentage, mean, standard deviation, one-way analysis of variance, t-test, analysis of variance (ANOVA), and multiple classification analysis (MCA). The qualitative research was analyzed by descriptive approach analysis.

The results of the quantitative research confirmed that the adoption of herbal cosmetic products was at a high level. The factors that affected adoption included occupation, convenience of buying herbal cosmetic products, experience in use of herbal products, access to herbal cosmetic product information, knowledge of herbal cosmetic products, attitude toward herbal cosmetic products, and modernization. As in the quantitative research, most of the people in the qualitative research were middle class. The factors affecting the adoption of herbal cosmetic products were access to herbal cosmetic products information through the mass media and interpersonal communication, attitude concerning confidence in the use of herbal cosmetic products and trust in producers. Moreover, the use of herbal cosmetic products is part of the "back to nature" fashion, it promotes the Thai economy, and conserves Thai wisdom. Therefore, they have adopted herbal cosmetic products.

The study suggests that there should be an increase the number of places selling the herbal cosmetic products. Also, other hospitals, organization and community should be encouraged to produce herbal cosmetic products using local herbs under the supervision of Chaophaya Abhaibhubejhr Hospital. There should be an increase the dissemination of herbal cosmetic product information and technical data about herbal cosmetic products should be update. There should also be further study, research and development of herbal cosmetic products in order to sustain the adoption of these products.

4137324 SHEV/M : สาขาวิชา : สิ่งแวดล้อม ; สค.ม. (สิ่งแวดล้อม)

แดนสรวง วรรณวงศ์สอน : การยอมรับผลิตภัณฑ์เครื่องสำอางจากสมุนไพรของประชาชน ศึกษากรณี : ผลิตภัณฑ์เครื่องสำอางจากสมุนไพรของโรงพยาบาลศูนย์เจ้าพระยาอภัยภูเบศร (THE ADOPTION OF HERBAL COSMETIC PRODUCTS A CASE STUDY OF THE HERBAL COSMETIC PRODUCTS PRODUCED BY CHAOPHAYA ABHAIBHUBEJHR HOSPITAL IN PRACHINBURI PROVINCE) คณะกรรมการควบคุมวิทยานิพนธ์: จิราพร จักรไพวงศ์, ศ.บ., สค.ม. (สิ่งแวดล้อม), พรรณิภา บูรพาชีพ, น.บ.(เกียรตินิยมดี), น.ม., ชุติมา แสงเงิน, กศ.บ., สค.ม.(สิ่งแวดล้อม), 103 หน้า, ISBN 974-04-0663-7

การวิจัยครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาระดับการยอมรับและปัจจัยที่มีผลต่อการยอมรับ ตลอดจนปัญหา อุปสรรค และข้อเสนอแนะ เพื่อเป็นแนวทางในการวางแผนและส่งเสริมการยอมรับผลิตภัณฑ์เครื่องสำอางจากสมุนไพร เป็นการวิจัย 2 ลักษณะ คือ การวิจัยเชิงปริมาณ โดยใช้แบบสอบถามเก็บข้อมูลจากผู้ซื้อผลิตภัณฑ์เครื่องสำอางจากสมุนไพร จำนวน 400 ราย ร่วมกับการวิจัยเชิงคุณภาพ โดยใช้วิธีการสัมภาษณ์แบบเจาะลึก ผู้ที่เกี่ยวข้องกับการผลิต การจำหน่าย และการใช้ผลิตภัณฑ์เครื่องสำอางจากสมุนไพร ผลการวิจัยสรุปได้ดังนี้

ผลการวิจัยเชิงปริมาณพบว่า ประชาชนมีการยอมรับผลิตภัณฑ์เครื่องสำอางจากสมุนไพรระดับสูง โดยปัจจัยที่มีผลต่อการยอมรับได้แก่ อาชีพ ความสะดวกในการหาซื้อ ประสบการณ์เกี่ยวกับการใช้ผลิตภัณฑ์จากสมุนไพร การรับรู้ข่าวสารเกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพร ความรู้เกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพร ทัศนคติเกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพร และความทันสมัย ซึ่งสอดคล้องกับผลจากการวิจัยเชิงคุณภาพที่พบว่า ผู้ใช้ผลิตภัณฑ์เครื่องสำอางจากสมุนไพรส่วนใหญ่มีฐานะปานกลาง โดยปัจจัยที่มีผลต่อการยอมรับที่สำคัญได้แก่ การรับรู้ข่าวสารเกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพรจากสื่อที่มีความน่าเชื่อถือ และทัศนคติเกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพร จึงทำให้ประชาชนมีความมั่นใจในสรรพคุณ และเชื่อถือในสถานที่ผลิต นอกจากนั้นยังเป็นไปตามกระแสความนิยมผลิตภัณฑ์จากธรรมชาติ

ข้อเสนอแนะ ควรเพิ่มสถานที่จำหน่ายให้มากขึ้น และสนับสนุนให้โรงพยาบาล หน่วยงาน องค์กร หรือกลุ่มชุมชนต่างๆ ดำเนินการผลิตผลิตภัณฑ์เครื่องสำอางจากสมุนไพร โดยใช้สมุนไพรในท้องถิ่น และเผยแพร่ข่าวสารเกี่ยวกับผลิตภัณฑ์เครื่องสำอางจากสมุนไพรมากขึ้น นอกจากนี้ ควรศึกษา วิจัยและพัฒนาผลิตภัณฑ์เครื่องสำอางจากสมุนไพรอย่างต่อเนื่อง

CONTENTS

CONTENTS (Cont.)

LIST OF TABLES

LIST OF TABLES (Cont.)

CHAPTER I

INTRODUCTION

1.1 Background

"Herb" is a subordinate from forests like vegetables, animals and minerals all are adapted to the needs of life-beings and in the course of ages till now men and animals have been using them as medicine to cure and protect body and mind health. (Pennapa Subcharoen, 2538 : 91) The herbs are very useful by themselves whether used still in natural state or mixed. Early in the past, evidence of it can be found. From the Buddhist era when Lord Buddha recorded some of herbs in the tripitaka when explaining utility of these things for example and principally of turmeric, ginger, long pepper, myrobalan, emblic tree, asafetida which are still used now because people recognize their efficacy. This knowledge became actually studied by the art and science department in the herbals section (Thaiand Institute of Scientific and Technological Research, 2532 : 1)

These different articles of the pharmacopoeia are useful to cure different sicknesses and diseases. They are also used in different kinds of cosmetics for the skin. From antiquity Egyptians used Henna Leaves and Litmus to stain the skin, Indians were using Eagle wood, myrrh, Sandal wood as perfume. Europeans were using Lavender, Rose to perfume clothing. Burmese used Patchae and Pgata wood as face powder. Thai are using the soap nut for bath, bitter gourd, acacia as shampoo. Chinese are using tea seeds as shampoo. A long time ago it was very easy to find them without any modification (Phimphon Leelaphonphisitr, 2532 : 9)

Using cosmetics is a fashion and during the last period, everywhere in the world, cosmetics evolved from synthetic components back to the natural substances which are less dangerous, as people became aware of the danger of many kinds of synthetic cosmetics. This evolution is going up in many fields and efforts are done to make know the efficacy of natural substances and the way to grow it. This movement improved the use of natural products, (Mahidol University, Faculty of Pharmacy, Department of Pharmacognosy, 2534:418)

In the present time, when Thailand meet economical crisis, it is urgent to develop the production of the herbals and the effort has been made under the royal guidance of the King Bhumibol axed to production and cooperation with the Ministry of Public Health and the collaboration of universities and institutes to grow and scientific exploitation of the herbals. The population answered widely to this orientation. (Phayao Meuenwongyath, 2537 foreword)

The growth of the campaign for the use of the herbals became an important and crucial point of the Eighth National Economical and Social

Development Plan (B.E. 2540 – 2544) to increase the production in self – dependence and for capacity to be self supporting . It was possible to develop them at industrial level for exportation. (National Economic and Social Development Board, 2539:29) The Ministry of Public Health, in collaboration with the primary health care program, become aware of the importance of growth of herbal products by promoting the increased use of herbal products to cure disease in the health office and by promoting the planting seeds of herbal up country villages. Improving planting and use became a source of saving money helping to reduce waste and was safe for environment, improving nature and helping to preserve natural wealth of the country.

From B.E.2526 Chaophaya Abhaibhubejhr Hospital in Prachinburi province has a medical program of use of herbs with, at the starting point, took in consideration the fact that Thailand has to buy medicines from abroad for many millions of Bath each year when instead it was possible to use the herbs to replace them because Thailand is high in biodiversity, has many herbs which they may use instead of imported medical from abroad and each saved baht may be used in the country. Chaophaya Abhaibhubejhr Hospital has many important activities such as, the herbal data collection, the demonstration herbal garden, the distribution to Thai traditional medicine, training about use and improvement of the herbal products, and improving herbal medicine, herbal foods, herbal beverage and herbal cosmetic products in order to get easy and standardized products, whose number reaches 29 kinds. Their selling reach monthly 2 – 3 millions Baths, the best being herbal cosmetic products. (Chaophaya Abhaibhubejhr Hospital, n.d.)

From the exposed experiences it becomes evident that the adoption of herbal cosmetic products a case study of the herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital in Prachinburi. This fact promotes the use of the herbal cosmetic products and reduce the use of cosmetics from imported synthetics products from abroad, diminution of the pollution of environment to meet the natural equilibrium and the research of new herbal products for cosmetics and other uses, helping to solve economical problems of the country and to sustainable development.

1.2 Objectives of the Study

1. To study the level of the adoption of herbal cosmetic products.
2. To study the factors affecting the adoption of herbal cosmetic products.
3. To study the problems, obstacles and suggestions related to the adoption of herbal cosmetic products.

1.3 Scope of the Study

The goal of this study is to clear the adoption of herbal cosmetic products specially by the herbal cosmetic products which are produced by Chaophaya Abhaibhubejhr Hospital and the customers of herbal shop in Chaophaya Abhaibhubejhr Hospital who buy herbal cosmetic products.

1.4 Definitions

Adoption refers to the mental process in decision by an individual to use a new idea, practice, or object that an individual has been well perceived, studied and described to be sure of the quality and utility of the product. It requires 5 considerations: Awareness Stage, Interest Stage, Trial Stage, Implementation Stage, and Confirmation Stage.

The herbal cosmetic products refer to herbal cosmetics of Chaophraya Abhaibhubejhr Hospital, consist of: borapet shampoo, ginger shampoo, butterfly pea hair conditioner, scalp treatment emblic myrobalan and myrobalan wood, mangosteen peel soap, turmeric soap, turmeric liquid soap and tamarind herbal cleansing cream.

The adoption of herbal cosmetic products refers to the mental process in decision by an individual to use the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital that an individual has been well perceived, studied and described to be sure of the quality and utility of the herbal cosmetics product. It requires 5 considerations: Awareness Stage, Interest Stage, Trial Stage, Implementation Stage, and Confirmation Stage.

People refers to the customers of the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital, buying the herbal cosmetic products in herbal shop of Chaophaya Abhaibhubejhr Hospital.

Member refers to the customers of the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital who are registered in herbal shop of Chaophaya Abhaibhubejhr Hospital.

Income refers to the monthly average of earning capacity including the other activities of people who have not yet deducted other expenses.

Convenience to buy herbal cosmetic products refers to facility or available access for the people to buy the herbal cosmetic products.

Experience in use of herbal products refers to use or no use of the herbal products, keeping other people in observation about their use of the herbal products.

Experience of problems from the use of cosmetics refers to problems arising from the use of cosmetics risen by the people themselves or observed in other people.

Access to herbal cosmetic product information refers to the reception of all information concerning the herbal cosmetic products through frequently accessible media.

Knowledge of herbal cosmetic products refers to matters of fact data concerning the herbal cosmetic products coming from education, research, observation, or direct / indirectly experience.

Attitude toward herbal cosmetic products refers to the positive or negative reaction of people' towards on the herbal cosmetic products.

Valuation of health refers to improving his or her personal health in order to improve mental and physical health and avoid disease.

Awareness of environment refers to the mental state of individual knowledge, urgency, responsibility concerning environment or the true situation of environment, like the waste suppression, rational use of energy and preserving the natural resources, especially.

Modernization refers to the vogue of individual concerning news, situation and innovation.

1.5 Variables of the Study

1. **Independent Variables** are divided into 2 groups as follows:

   1.1 Socio – demographic Variables:

   - Gender
   - Age
   - Occupation
   - Education
   - Income

   1.2 Motive Variable:

   - Convenience to buy herbal cosmetic products
   - Experience in use of herbal products
   - Experience of problems from the use of cosmetics
   - Access to herbal cosmetic product information
   - Knowledge of herbal cosmetic products
   - Attitude toward herbal cosmetic products
   - Valuation of health
   - Awareness of environment
   - Modernization

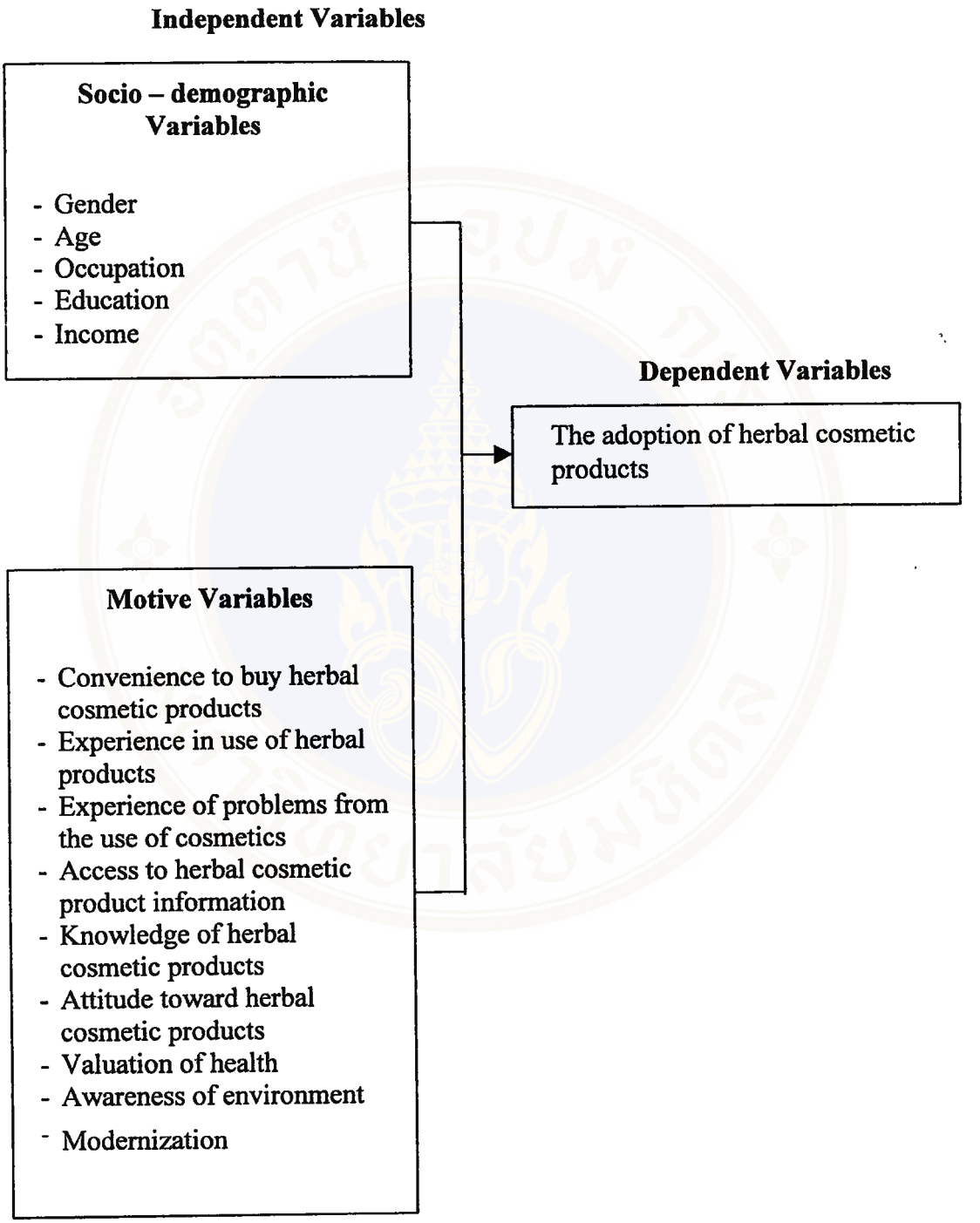
2. **Dependent Variables:**

   The adoption of herbal cosmetic products.

1.6 Level of Measurement

Variables	Measurement level
1. Independent Variables	
1.1 Socio – demographic Variables	
- Gender	Nominal
- Age	Nominal, Interval
- Occupation	Nominal
- Education	Nominal
- Income	Nominal, Interval
1.2 Motive Variables	
- Convenience to buy herbal cosmetic products	Nominal
- Experience in use of herbal product	Interval
- Experience of problems from the use of cosmetics	Interval
- Access to herbal cosmetic product information	Interval
- Knowledge of herbal cosmetics products	Interval
- Attitude toward herbal cosmetic products	Interval
- Valuation of health	Interval
- Awareness of environment	Interval
- Modernization	Interval
2. Dependent Variables	
- The adoption of herbal cosmetic products	Interval

1.7 Conceptual Framework



1.8 Hypotheses

1. The adoption of herbal cosmetic products is at moderate level.

2. Socio – demographic factors make difference to adoption of herbal cosmetic products.

2.1 Gender makes difference to the adoption of herbal cosmetic products.

2.2 Age makes difference to the adoption of herbal cosmetic products.

2.3 Education makes difference to the adoption of herbal cosmetic products.

2.4 Occupation makes difference to the adoption of herbal cosmetic products.

2.5 Income makes difference to the adoption of herbal cosmetic products.

3. Motive factors make difference to adoption of herbal cosmetic products.

3.1 Convenience to buy herbal cosmetic products makes difference to the adoption of herbal cosmetic products.

3.2 Experience in use of herbal products makes difference to the adoption of herbal cosmetic products.

3.3 Experience of problems from the use of cosmetics makes difference to the adoption of herbal cosmetic products.

3.4 Access to herbal cosmetic product information makes difference to the adoption of herbal cosmetic products.

3.5 Knowledge of herbal cosmetic products makes difference to the adoption of herbal cosmetic products.

3.6 Attitude toward herbal cosmetic products makes difference to the adoption of herbal cosmetic products.

3.7 Valuation of health makes difference to the adoption of herbal cosmetic products.

3.8 Awareness of environment makes difference to the adoption of herbal cosmetic products.

3.9 Modernization makes difference to the adoption of herbal cosmetic products.

1.9 Benefits of the Study

1. To realize the level of the adoption of herbal cosmetic products.
2. To realize the factors affecting of the adoption of herbal cosmetic products.
3. To realize the problems, obstacles and suggestions related to the adoption of herbal cosmetic products.

CHAPTER II

LITERATURE REVIEW

Conducting study on the adoption of herbal cosmetic products a case study of the herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital in Prachinburi province, the researcher has reviewed concepts and theories from relevant academic documents, books and researches about this study. This literature review contributes to the following indispensable guidelines:

2.1 Concepts of the Adoption

2.1.1 Meaning of the Adoption

Everett M. Rogers & F. Floyd Shoemaker (1971: 99), the innovation – decision process is the mental process through which an individual passes from first knowledge of an innovation to a decision to adopt or reject and to confirmation of this decision.

Everett Rogers (1983: 21), adoption is a decision to make full use of an innovation as the best course of action available.

Kotler, Philip & Armstrong, Gary (1989:155), define adoption process as "the mental process through which an individual passes from first hearing about an innovation to final adoption". Define adoption as "the decision by an individual to become a regular user of the product."

George M. Foster (1973: 146 – 147), the adoption of new idea and techniques means that people must learn (and often, unlearn). The psychology of learning has been well studied and described in recent years, but an awareness of the complexity of process has not always been translated into action in developmental programs.

As regards the above adoption concepts, in this study, adoption referred the mental process in decision by an individual to use a new idea, practice, or object that an individual has been well perceived, studied and described to be sure of the quality and utility of the product.

2.1.2 Meaning of the Innovation

Everett M. Rogers (1983:11), explains that an innovation is an idea, practice, or object that is perceived as news by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is "objectively" new as measured by the lapse of the time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation.

Newness in an innovation needs not just involving new knowledge. Someone may have known about an innovation for some time but not yet developed a favorable or unfavorable attitude toward it, nor have adopted or rejected it. The "newness" aspect of an innovation may be expressed in terms of knowledge, persuasion, or a decision to adopt.

2.1.3 Adoption Process

Kotler, Philip and Armstrong, Gary (1989:155 – 156) define adoption process as "the mental process through which an individual passes from first hearing about an innovation to final adoption". Consumers go through five stages in the process of adopting a new product:

1. Awareness: The consumer becomes aware of the product but lacks information about it.
2. Interest: The consumer is stimulated to seek information about the product.
3. Evaluation: The consumer considers whether it would make sense to try the product.
4. Trial: The consumer tries the product on small scale to improve his or her estimate of its value.
5. Adoption: The consumer decides to make full and regular use of the product.

Everett M. Rogers and F. Floyd Shoemaker (1971:100 – 101) the traditional view of the innovation – decision process, called the "adoption process", was postulated by a committee of rural sociologists in 1995 as consisting of five stages:

1. Awareness Stage. The individual learns of the existence of the new idea but lacks information about it.
2. Interest Stage. The individual develops interest in the innovation and seeks additional information about it.

3. Evaluation Stage. The individual makes mental application of the new idea to his present and anticipated future situation and decides whether or not to try it.

4. Trial Stage. The individual actually applies the new idea on a small scale in order to determine its utility in his own situation.

5. Adoption Stage. The individual uses the new idea continuously on a full scale.

Everett M. Rogers (1983: 163 – 175) the innovation – decision process is the process through which an individual (or other decision – making unit) passes from first knowledge of innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and confirmation of this decision. This process consists of five stages:

1. Knowledge occurs when an individual (or other decision – making units) is exposed to the innovation's existence and gains some understanding of how it functions. Type of knowledge about an innovation consists of 3 categories:

- Awareness: knowledge consists of information to reduce uncertainly about the cause – effect relationships that are involved in achieving a desired outcome. Questions such as "What is the innovation?" "How does it work?" and "Why does it work?" are the main concerns of an individual, once he or she is aware that an innovation exists.
- How – to: knowledge consists of information necessary to use an innovation properly. The adopter must understand what quantity of an innovation to secure, how to use it correctly, and so on. In case of innovations that are relatively more complex, the amount of how – to knowledge needed for proper adoption is much greater than in the case of less complex ideas.
- Principles: knowledge consists of information dealing with the functioning principles underlying how the innovation works.

2. Persuasion occurs when an individual (or other decision – making unit) forms a favorable or unfavorable attitude toward the innovation. The individual wants to know that his or her thinking is on the right track in opinion of his or her peers. Mass media messages are too general to provide the specific kind of reinforcement that the individual needs to confirm his or her beliefs about the innovation. The individual usually wants to know the answers to such questions as "What are the innovation's consequences?" and "What will its advantages and disadvantages be in my situation?" This type of information, while often easily available from scientific evaluations of an innovation, is usually sought by most individuals from their near – peers whose subjective opinion of the innovation (based on their personal experience with adoption of the new idea) is most convincing. When someone like ourselves tells us of his or her positive evaluation of a new idea, we are often motivated to adopt it.

3. Decision occurs when an individual (or other decision – making units) is engaged in activities that lead to a choice to adopt or reject the innovation.

4. Implementation occurs when an individual (or other decision – making unit) puts an innovation into use. Until the implementation stage, the innovation – decision process has been a strictly mental exercise. But implementation involves overt behavior change, as the new idea is actually put into practice. Past conceptualization of the innovation – decision processes have generally not fully recognized the importance,

or even the existence, of the implementation stage. It is often one thing for the individual to decide to adopt a new idea and quite a different thing to put the innovation into use. Problems in exactly how to use the innovation may crop up at implementation stage. Implementation usually follows the decision stage rather unless it is held up by some logistical problem, like the temporary unavailability of the innovation.

5. Confirmation occurs when an individual (or other decision – making unit) seeks reinforcement of an innovation – decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.

For this study, adoption process consists of five stages: Awareness Stage, Interest Stage, Trial Stage, Implementation Stage, and Confirmation Stage

2.1.4 Characteristics of Innovation

Everett M. Rogers and F. Floyd Shoemaker (1971: 22 – 23) several characteristics of innovations, as sensed by the receivers, contribute to their different rate of adoption.

1. Relative Advantage is the degree to which an innovation is perceived as better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, but often social prestige factors, convenience, and satisfaction are also important components. It matters little whether the innovation has a great deal of "objective" advantage. What does matter is whether the individual perceives the innovation as being advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption.

2. Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of the receivers. An idea that is not compatible with the prevalent values and norms of the social system will not be adopted as rapidly as an innovation that is compatible. The adoption of an incompatible innovation often requires the prior adoption of new value system.

3. Complexity is the degree to which an innovation is perceived as difficult to understand and use. Some innovations are readily understood by most members of social system; others are not and will be adopted more slowly.

4. Trialability is the degree to which an innovation may be experimented with on a limited basis. New ideas which can be tried on the installment plan will generally be adopted more quickly than innovations which are not divisible.

5. Observability is the degree to which the results of an innovation are visible to others. The easier it is for an individual to see the results of an innovation, the more likely he is to adopt.

2.1.5 Adopter Categories

Everett M. Rogers (1983:247 – 251), the five adopter categories are ideal types. Ideal types are conceptualizations based on observations of reality and designed to make comparisons possible. The function of ideal types is to guide research efforts and to serve as a framework for the synthesis of research finding. Now present a thumbnail

sketch of the dominant characteristics and values of each adopter category, which will be followed by more detailed generalizations.

1. Innovators: Venturesome

Observers have noted that venturesomeness is almost an obsession with innovators. They are very eager to try new ideas. This interest leads them out of a local circle of peer networks and into more cosmopolite social relationships. Communication patterns and friendships among a clique of innovators are common, even though the geographical distance between the innovators may be considerable. Being an innovator has several prerequisites. These include control of substantial financial resources to absorb the possible loss owing to an unprofitable innovation and ability to understand and apply complex technical knowledge. The innovator must be able to cope with the high degree of uncertainty about an innovation at the time that the innovator adopts.

2. Early Adopters: Respectable

Early adopters are a more integrated part of the local social system than are innovators. Whereas innovators are cosmopolites, early adopters are localites. This adopter category, more than any other, has the greatest degree of opinion leadership in most social systems. Potential adopters look to early adopters for advice and information about the innovation. The early adopters is considered by many as "the individual to check with" before using a new idea. This adopter category is generally sought by change agents to be a local missionary for speeding the diffusion process. Because early adopters are not too far ahead of the average individual in innovativeness, they serve as a role model for many other members of social system. The early adopter is respected by his or her peers, and is the embodiment of successful and discrete use of new idea. And the early adopter knows that to continue to earn this esteem of colleagues and to maintain a central position in the communication structure of the system, he or she must make judicious innovation decisions. So the role of the early adopter is to decrease uncertainly about a new idea by adopting it, and then conveying a subjective evaluation of the innovation to near – peers by mean of interpersonal networks.

3. Early Majority: Deliberate

The early majority adopt new ideas just before the average member of a social system. The early majority interact frequently with their peers, but seldom holds leadership positions. The early majority's unique position between the very early and the relatively late to adopt makes them an important link in the diffusion process. They provide interconnectedness in the system's networks.

The early majority may deliberate or some time before completely adopting a new idea. Their innovation – decision period is relatively longer than that of the innovator and the early adopter. "Be not the first by which the new is tried, /Nor the last to lay the old aside", might be the early majority's motto. They follow with deliberate willingness in adopting innovations, but seldom lead.

4. Late Majority: Skeptical

The late majority adopt new ideas just after the average member of a social system. Adoption may be both an economic necessity and the answer to increasing network pressures. Innovations are approached with a skeptical and

cautious air, and the late majority do not adopt until most others in their social system have done so. The weight of system norms must definitely favor the innovation before the late majority are convinced. They can be persuaded of the utility of new ideas, but the pressure of peers is necessary to motivate adoption. Their relatively scarce resources mean that almost all of the uncertainty about a new idea must be removed before the late majority feel that it is safe to adopt.

5. Laggards: Traditional

Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. They are the most localite in their outlook of all adopter categories; many are near isolates in social networks. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done in previous generations and these individuals already interact primarily with others who also have relatively traditional values. When laggards finally adopt an innovation, it may already have been superseded by another more recent idea that is already being used by the innovators. Laggards tend to be frankly suspicious of innovations and change agents. Their traditional orientation slows the innovation – decision process to crawl, with adoption lagging far behind awareness – knowledge of new idea. While most individuals in a social system are looking to the road of change ahead, the laggard's attention is fixed on the rear – view mirror. This resistance to innovations on the part of laggard may be entirely rational from laggards' viewpoint, as their resources are limited and so they must be relatively certain that a new idea will not fail before they can afford to adopt. The laggard's precarious economic position forces these individuals to be extremely cautious in adopting innovations.

2.1.6 Characteristics of Adopter Categories

Everett M. Rogers and F. Floyd Shoemaker (1971:185 – 191) the characteristics of adopter categories are summarized as generalizations under the following headings:

1. Socioeconomic Characteristics

- Earlier adopters are no different from later adopters in age.
- Earlier adopters have more years of education than do later adopters.
- Earlier adopters are more likely to be literate than are later adopters.
- Earlier adopters have higher social status than later adopters do. Status is indicated by such variables as income, level of living, possession of wealth, occupational prestige, self – perceived identification with a social class, and the like.
- Earlier adopters have greater degree of upward social mobility than later adopters.
- Earlier adopters have lager sized units (farms and so on) than later adopters.
- Earlier adopters are likely to have a commercial (rather than subsistence) economic orientation than are later adopters.
- Earlier adopters have a more favorable attitude toward credit (borrowing money) than later adopters.
- Earlier adopters have more specialized operations than later adopters.

2. Personality Variables

- Earlier adopters have greater empathy than later adopters. Empathy is the ability of an individual to project himself into the role of another person. This ability is an important quality for the innovator, who must be able to think counterfactually, be imaginative, and take the role of heterophilous in order to communicate effectively with others.
- Earlier adopters are less dogmatic than later adopters. Dogmatism is a variable representing a relatively closed belief system, a set of beliefs that are strongly held. The highly dogmatic person would not welcome new ideas; he prefers to hew to past in closed manner.
- Earlier adopters have a greater ability to deal with abstractions than later adopters. Innovators must be able to adopt a new idea largely on the basis of abstract stimuli, such as are received from the mass media. But later adopters can observe the innovation in the here – and – now of a peer's operation. Therefore, they need less ability to deal with abstractions.
- Earlier adopters have greater rationality than later adopters. Rationality is use of most effective means to reach a given end.
- Earlier adopters have greater intelligence than later adopters.
- Earlier adopters have a more favorable attitude toward change than later adopters.
- Earlier adopters have a more favorable attitude toward risk than later adopters.
- Earlier adopters have a more favorable attitude toward education than later adopters.
- Earlier adopters have a more favorable attitude toward science than later adopters. Because most innovations are the products of scientific research, it is logical than innovators should be more favorably inclined toward science.
- Earlier adopters are less fatalistic than later adopters. Fatalism is the degree to which an individual perceives a lack of ability to control his future. How can a change agent convince a client to adopt innovations that will control the size of his family and give him better health and a higher level of living when the client believes that his future is determined by fate?
- Earlier adopters have higher levels of achievement motivation than later adopters. Achievement motivation is a social value, which emphasizes a desire for excellence in order for an individual to attain a sense of personal accomplishment.
- Earlier adopters have higher aspirations (for education, occupations, and so on) than later adopters.

3. Communication Behavior

- Earlier adopters have more social participation than later adopters.
- Earlier adopters are more highly integrated with the social system than later adopters. Communication integration is the degree to which the units in a social system are interconnected by interpersonal communication channels.
- Earlier adopters are more cosmopolite than later adopters. The innovators' reference groups are more likely to be outside rather than within their social system. They travel widely and are involved in matters beyond the boundary of their local system.

- Earlier adopters have more change agent contact than later adopters.
- Earlier adopters have greater exposure to mass media communication channels than later adopters.
- Earlier adopters have greater exposure to interpersonal media communication channels than later adopters.
- Earlier adopters seek information about innovations more than later adopters.
- Earlier adopters have greater knowledge of innovations than later adopters.
- Earlier adopters have a higher degree of opinion leadership than later adopters. The innovativeness and opinion leadership are positively related, the degree to which these two variables are related depends in part on the norms of the system. In a modern system opinion leaders are more likely to be innovators than in traditional systems.
- Earlier adopters are more likely to belong to systems with modern rather than traditional norms, than are later adopters.
- Earlier adopters are more likely to belong to well integrated system than are later adopters. The internal "trickle – down" of new ideas in a well integrated system is faster, enabling the members of such systems to learn about new ideas more rapidly.

2.2 Concepts of Herbs

2.2.1 Meaning of Herbs

The Protection and Promotion Thai Wisdom Act. B.E. 2542 (1999) "Herbs" refers to plants, animal, microorganism, element, the substance of plants or animals are mixed, compound to be medicine or food for diagnose, therapy, treatment, prevent, healthy promotion and including source or habitat of them.

2.2.2 Chemical and Pharmacology of Herb

Herbs are composed of many chemicals. The parts of herb are difference substances that set useful of herbal. Type and quantity of chemical to be changed by type of herb, environment and keeping period. Chemical of herbal had 2 categories as follows: (Ministry of Public Health, Office of the Permanent Secretary, The Office of Commission for Primary Health Care, 2530: 22 – 23)

1) Primary metabolite is substances in plant that are produced by Photosynthesis such as Carbohydrate, Lipid, Protein, Pigment and Inorganic salt.

2) Secondary metabolite is a special substance found in different types of plant that may be produced by Biosynthesis to compound enzyme, such as Alkaloid, Anthraquinone, and Essential oil.

Most of Secondary metabolite had a useful for pharmacy and some Primary metabolite had a useful for pharmacy.

Chemistry of Herbs

Many chemicals have been isolated from herbs. The compounds which possess biological activities and are commonly found are as follows. (Norman R. Farnsworth & Nuntavan Bunyapraphatsara, 1992:3 – 4)

1. **Alkaloids** are basic nitrogenous compounds usually with bitter taste. Free alkaloids are soluble in organic solvent e.g. chloroform, ether, etc. alkaloids will react with acid to form alkaloid salts which are water soluble. Many alkaloids possess pharmacological activities such as hyoscyamine, the alkaloid found in *Datura spp.*,possess antispasmodic activity.
2. **Glycosides** are compounds composed of glycone and aglycone parts. Sugars attatched to the aglycone make the compound water soluble. The aglycone parts may have various structures and biological activities. The example of glycosides are anthraquinone, a laxative drug; steroids or triterpenes, the anti – inflammatory agents or bronchodildtors, etc.
3. **Essential oil** is the mixture of chemicals usually terpenes responsible for the fragrant of the plant. It is not only important in perfumery but some essential oil exhibits carminative and antibacterial activity. They are also used as food and drug flavoring agents.
4. **Tannins** are the polyphenolic compounds commonly found in the plant. Tannins, the weakly acidic compounds may from precipitated with protein, or react with ferric chloride to produce green blue or dark blue color. Tannins may be used as anti diarrheal owing to their astringent property.
5. **Gum** is sticky exudate produced by plant when the injury occurs. Some gums are used in pharmaceutical preparation.
6. **Latex** is the white exudate composing of starch, resin and other chemicals. It may contain phorbol which is a co – carcinogen.
7. **Steroids** are the tetracyclic compounds with hydroxyl groups attached at different positions. Many steroids are the precursors for synthesis of various hormones and anti – inflammatory drugs.
8. **Saponins** usually occur in nature as glycosides. The aglycone part may be steroids or triterpenoids. The aqueous solution will form persistant foam when the solution is shaken. It causes hemolysis of the red blood cells when it is mixed with blood suspension. Saponins are highly toxic to fishes.
9. **Flavonoids** are the highly oxygenated compounds composed of carbon atoms arranging in C6 – C3 – C6 fashion. Flavonoids exhibit various pharmacological activities, for example anti – inflammatory, bronchodilator, smooth muscle relaxant, antibacterial activities, etc.
10. **Cyanogenic Glycosides** are toxic substances found in many plants. Upon hydrolysis with enzymes or acid, they produce HCN which is highly toxic to human being. Hydrocyanic acid will compete with oxygen to attach to red blood cells, which will result in cyanosis. These compounds are easily destroyed by heat. To avoid the toxicity from these compounds some plant such as topioca leaves are cooked before consumption.

2.2.3 Herbs Value

The herb values can be classified as i.e. medical and healthy value, economy value, ecology value and agricultural value. (Pennapa Subcharoen, 1996:10 – 13)

1) **Medical and healthy**: The herb is used in medical and healthy, and consume by 3 categories i.e. the natural herb, the premixed herbal product and traditional medicine.

2) **Economy**: The herb is important resource for material of traditional medicine industry. The traditional medicine industry has obstacles concerning law and material. Some herbs are hard to find, scarce and have to be imported from abroad. Present technology of traditional medicine is developed to be industrialization that to be economy value, to decrease imported medicine, to decrease economy loss that support to be industrial strength, to increase jobs for people and increase income for agriculturist.

3) **Ecology**: Thailand is a joint of moist evergreen forest and tropical deciduous forest; consequently, Thailand has many kinds of forest like moist evergreen forest, dry evergreen forest, mixed deciduous forest, dry deciduous dipterocarp forest, swamp forest and mangrove forest, ecology of Thailand has biodiversity. Many plants are usable in herbal medicine such as nim tree, teak tree, pterocarpus, emblic tree. Present many forests have been destroyed so some herbs are decrease quantity and quality. The development of herbal medicine industrial and increase herbal using promotion, the study on herbal and herbal conservation including the herbal growing promotion and increase herbal breeding are increase biodiversity that they are good for the ecosystem.

4) **Agricultural**: The agriculture industrial used a lot of chemical fertilizer and pesticide that it is the cause of environment problems and healthy problems. The some herbs have properties as pesticide such nim tree, citronella, galingale, they are pesticide and treatment of plants disease. The herbs are agricultural value and consumers because the products, which produced by herbal pesticide, are chemical free that they are safety for the consumer.

2.2.4 Benefit of Herbs

The benefit of herbs has 3 categories: dietary, medical and pharmaceutical, and industrial aspects. (Rungratana Ruangnatheetaph, 1992: 9 – 12)

1. **Dietary Aspects**: The herbs are used for eating, to compound in food, to mixed flavor and color of foods, and preserve food.

2. **Medical and Pharmaceutical Aspects**: The herbs have wide properties in medicine and pharmacy such as:

- Compound in medicine like remedy for cough, carminative and antiperistaltic.
- Refreshing / relieving exhaustion
- Tonic, carminative
- Remedy for diarrhea
- Expectorant

- Antihistaminic, anti inflammatory, insect bites
- Pediculicide

3. **Industrial Aspects**: The herbal has many chemicals such as Aldehyde, Alkaloid, Glycoside, Cholin, and Carbonic acid which can be used in industry as follows:

- Cosmetic
- Dyestuff
- Tobacco
- Paint, varnish
- Canned food

2.2.5 The Advantage and Disadvantage of Herbal use

The advantages of herbal use are as follows:

1. The herbs are natural resources which are easy to find.
2. The herbal use is safe because most herbs give mild effect and rather non-toxicity.
3. The herbal use is appropriate for everyone, especially the people in rural and remote area because herb is easy to find everywhere.
4. The herbal use is reducible the lack of medicine especially some medicine are replaced by herbs.
5. The herbal plants are economic plants that save cost to buy medicine, and can be produced for sale both domestically and abroad.

The disadvantages of herbal use are as follows:

1. Difficult to use right species of the herbs because the characteristics of herbs are quite similar.
2. Difficult to use right dose and right scale.
3. Difficult to prepare.
4. Slow effect.
5. Some herbals have side effect.

2.2.6 Caution for the Herbal use

Many herbs are toxic if wrong method or over dose are used; therefore, they should be used carefully. Cautions for the herbal use classified as follows: (Nitsiri Ruangrungsri & Phayom Tontiwat, 1991: 8 – 9)

1. Right species
2. Right part
3. Right dose
4. Right method
5. Right disease and sign

In addition we should clean herbs, accessories and containers.

2.2.7 Harvesting Time

To obtain the plant material with high active constituents, the suitable harvesting time is depending on part used. (Norman R. Farnsworth & Nuntavan Bunyaprephatsara, 1992:5)

1. The roots, rhizomes or underground stems should be harvested after vegetative period.
2. The barks should be harvested before vegetative period.
3. Leaves and aerial part should be collected before flowering.
4. The flowers should be collected before pollination.
5. The fully mature seeds should be harvested.

2.2.8 Standard of the Herbs

Standard of the herbs is regulated in Thai Herbal Pharmacopoeia, and Study on the Principle of Herbal Medicine Quality Guaranty by Germany's standard, and the Standard of Herbs and Herbal Medicine Control by the World Health Organization as follows: (http://www.thaipun.com/phar3.htm)

1. Check character of plants by Macroscopics and Microscopic Characters
2. Check adulterant contents
3. Check substance contents
4. Check moisture and weight loss
5. Check ash contents
6. Check residual pesticide and heavy metal
7. Check contaminate

2.3 Concepts of Cosmetics

2.3.1 Meaning of Cosmetics

According to the Cosmetics Act B.E. 2535(1992) "Cosmetics" means (Food and Drug Administration, Cosmetic Control Division, 2001)

(1) preparation designed for use by applying, rubbing, powdering, spraying or otherwise applying to any part of the body to cleanse or beautify, including skin – care products but excluding ornament and clothing.
(2) substances intended for use as admixtures in. the manufacture of cosmetics.
(3) other substances designated specifically by the ministerial regulation as cosmetics.

2.3.2 Types of Cosmetics

Types of cosmetics products are classified by following aspects.

A. Categories of cosmetics products as classified by objective

Cosmetics products are classified by objective into 2 categories. (Pimolpan Pitayanukul, 1990:107)

1. Cosmetics products are used for beautify.
2. Cosmetics products are used for user psychology.

B. Categories of cosmetics products as classified by using purpose

Cosmetics products are classified by using purpose into 2 categories.

1. Non – pigmentary: object in use for cleansing, skin care, aromatic and fresh.
2. Pigmentary: object in use for make up.

C. Categories of cosmetics products as classified by law

The Cosmetics Act 1992 (B.E.2535) defines cosmetic products into 2 categories namely specially controlled, controlled. (Food and Drug Administration, Cosmetic Control Division, 2001)

1. Specially controlled cosmetics are defined by the use of specially controlled ingredients as part of the products or those products laid down by the ministerial notification as specially controlled cosmetics. These products are required to be registered and pay an annual fee as stated in the ministerial regulation to the Thai FDA prior to be marketed. Those cosmetics may cause serious harm to users or that contain toxic substances or other substances which cause serious harm to the health of users such as hair waved product, hair dye product, fluoride toothpaste, anti dandruff, mouse wash.
2. Controlled cosmetics are defined by the use of controlled ingredients as part of the products or those products laid down by the ministerial notification as controlled cosmetics. These products are required to be notified and pay an annual fee as stated in the ministerial regulation to the Thai FDA prior to be marketed such as sanitary towel, talcum powder, liquid powder, zinc pyrithione antidandruff, sun block.

Those cosmetic products that fall outside this scope will be regarded as general cosmetics such as soap, perfume, cleansing foam, styling mousse or foam.

2.4 Concept of the Herbal Cosmetic Products

2.4.1 Natural Cosmetic Ingredients

Most of natural cosmetics are produced from plants that contain plants' compound chemicals. The natural cosmetics characteristic consist of 4 categories as follows:

1. Classification by external characteristic of using part such as leaf, flower, root, bark, and fruit.
2. Classification by family or class of plant that use for made cosmetics.

3. Classification by chemical substances such as carbohydrates, lipid.
4. Classification by group of cosmetics such as hair preparation, hand cream.

Table 1 Substances of Plants in Cosmetics Manufacturing.

Type	Sample	Source	Useful
Carbohydrates Sugar and product of sugar	Sugar Sucrose Sorbitol	Sugar beet Mountain ash	Emollient Antiseptic Humectant
Polysaccharide	Corn starch Plant gums 1. Exudate produced by Plant Tragacanth, Acacia 2. Marine gums - algin - carrageenan	Corn Exudate produced by Plants	Skin-feel modifiers (slip agent) emulsifiers gelatin agents skin-feel modifiers suspending agents thickeners
Tannin	Gallotannin Condensed Tannins	Psidium guajava	Astringent
Lipid of Vegetable oil	Castor oil Olive oil Lanolin Jojoba oil	Castor beans (Ricinus communis) Olea europaea Wool fat Jojoba Simmondsia Chinensis	Skin-feel lubricant Super fatting agent Emollient Hair conditioning agent
Essential oil Alcohol	Rose oil	Rose gallica	Fragrance
Aldehyde	Lemongrass oil	Cymbopogon citratus	Fragrance
Ester	Lavender oil	Lavandula angustifolia	Fragrance Emollient
Bisabolol	Chamomile	Chamomile (Matricaria hamomilla)	Freshening
Steroids	Sistosterol campesterol	Soy bean (Glycine max)	Treatment for acne Anti gray hair Component in cosmetics

Table 1 Substances of plants in cosmetics process. (Cont.)

Type	Sample	Source	Useful
Triterpenoids	Glycyrrhetinic Acid (triterpenoids) glycyrrhetic acid ginsenosides asiaticoside madecassoside	Liquorice Glycyrrhizic acid Ginseng (Panax ginseng) Centella asiatica	Glycyrrhiza glabra Treatment for melasma Whitening Anti wrinkle Remove scar and wrinkle skin

Source: Exhibition of Thai traditional medicine cited in http://www.thaipun.com/Beauty/beauty-7.htm

2.4.2 Thai Herbs in Cosmetics

Natural extracts and herbs usage has been a part Thais life for hundred of Years. The Thais know how to use herbs for various purposes such as foods, medicines, and cosmetics. In the part, Kamin was on the skin to get good complexion. It also acts as a weak bactericidal thus keeps the skin healthy. Herbs are being used in cosmetics and toiletries up until now, these products are in the market in the forms of oral care, hair care and skin care. The techniques of using natural herbs in cosmetics has been developed gradually from using direct grinding materials in the part to using the most advanced technologies in extractions. The herbs which are commonly use in the Thai cosmetics are:

1. Thong phan chang

Scientific name *Rhinacanthus nasutus* (Linn.) Kurz.
Family ACANTHACEAE
Vernacular names Thong khan chang, Ya man kai (Central).
Botanical description Erect shrub, 1 – 2 m high; young stems quadrangular. Leaves simple, opposite, ovate or elliptic, 2 – 4 cm wide, 4 – 8 cm long. Inflorescence in axillay cyme; flowers white, bilabiate, lower lip with reddish purple blotches. Fruit loculicidal capsule; seeds orbicular, flat, pubescent; retinacula well – developed.
Parts used and uses
Leaves or barks: Orally, as antipyretic; treatment of skin diseases, ringworm, hemoptysis; anthelmintic.
Roots: Decoction, as an anti – TB; anticancer; antimicrobial; treatment of Grey – hair, nails loosing and leprosy.

2. Bua Bok

Scientific name	*Centella asiatica* (Linn.) Urban
Family	UMBELLIFERAE
Vernacular names	Pa – na – e – kha – do (Karen – Mae Hong Son), Phak – waen (Peninsula), Phak – nok (Northern).
Botanical description	Perennial creeping herb, found in moist places. Leaves alternate, simple, kidney – shaped, 2 – 5 cm in diameter. Imflorescence in axilly umbel; flowers small, violet or white. Fruit dry, dehiscent.
Parts used and uses	
Fresh leaf:	Treatment of sore throat, thirst: antipyretic, diuretic, antidiarrheal; externally used for burns and wounds. Preparation: grind 1 handful of well – cleaned fresh leaves with small amount of water, put on the affected area or squeeze and use only watery juice. Active constituents are madecassic acid, asiatic acid and asiaticoside, which are astringent and stimulate tissue repairment at affected area, lower the probability of kenoid formation, inhibits growth of *Staphylococcus* spp., possess antifungal activity against tinea versicolor and reduce inflammation. Commercialized product as anti – inflammatory cream for surgical wounds.
Seeds:	Antidysentery; antipyretic; treatment of headache.

3. Ka – meng – tua – mia

Scientific name	*Eclipta prostrata* Linn. Syn.: *E. alba* Hassk. And *E. erecta* Hassk.
Family	COMPOSITAE
Vernacular names	Ka meng (Central), Ya sap, Hom kieo (Northern)
Botanical description	Annual herb; stem green or reddish, puberulous. Leaves simple, opposite, elliptic – lanceolate, 3 – 7 cm long, 1 – 2.5 cm wide, hairy on both surfaces; trinerved at the base. Capitulas small, 1 – 2 on short peduncles in axils of upper leaves; ray flowers white, numerous; disc flowers 10 – 15. Fruits in achenes, pubescent at the top.
Parts used and uses	
Whole plants:	Styptic; kidney tonic; treatment of gonorrhea, leukorrhea, pruritic.
Leaves and roots:	Laxative; nauseant.
Roots:	Antiflatulence; tonic for liver, spleen, and blood.

4. Wan hang chorakhe

Star Cactus, Aloe, Aloin, Jafferabad, Barbados Aloe
Scientific name *Aloe barbadensis* Mill.
Family ALOACEAE (LILIACEAE)
Vernacular names Wan fai mai (Northern) Hang ta khe (Central)
Botanical description A short stemmed succulent herb, 0.5 – 1 m high. Leaves simple, densely rosulate, thickly fleshy, concave or rather flat above, convex beneath, often with lighter colored blotches when young, with marginal spines, 5 – 12 cm wide, 30 – 80 cm long, containing very bitter, yellowish brown sap. Inflorescence in terminal raceme or terminal panicle with racemiform branches; flowers yellowish orange, pendulous. Fruit capsule.
Parts used and uses
Yellow juice from leaves:
Boil gently to dry, used in many traditional recipes as purgative due to action of anthraquinone glycosides.
Fresh mucilage from leaves:
Contains glycoprotein, aloctin A; apply to temple to relieve headache; externally used for burns, sunburn, radiation burns, wounds and eczema; taken daily to relieve peptic ulcer; possesses anti – inflammatory activity and stimulates tissue repairment. Preparation: select lowest leaf first, cut into thin slices, put on the wounds or apply mucilage to affected area, cover with gauze, change twice a day; unstable, easily destroyed by air or heat; do not leave fresh mucilage for over 24 hours. Caution: yellow juice may cause skin allergies. Used in cosmetic products as shampoo, soap, protective cream for sunburn and radiation.

5. Un Chun

Butterfly pea
Scientific name *Clitoria ternatea* L.
Family *Leguminosae*
Vernacular names Dang chun (Chiang Mai) Uaeng chun (Northern)
Parts used and uses
Petal: hairs tonic, keep hair soft, smooth and shiny

6. Ma – krut

Leech Lime, Mauritius Papeda

Scientific name *Clitrus hystrix* DC.

Family RUTACEAE

Vernacular names Ma – khun, Ma – khut (Northern) Ma – khu (Karen – Mae Hong Son) Som – krut, Som – mua – phi (Peninsula)

Botanical description Shrub or small tree, 2 – 8 m high. Leaves and inflorescence similar to those of *C. aurantifolia*; leaves obicular – ovate or ovate – oblong, 2.5 – 5 cm wide, 3 – 8 cm long; petioles and wings together sometimes almost equaling the blade of leave. Fruit hesperidium, globose or ovoid, yellow or yellowish green, sour and slightly bitter.

Parts used and uses

Fresh juice: antiscurvy, expectorant; shampoo hair as antidandruff.

Fruit: as flavour; shampooing agent.

Fruit peel: carminative; relieves stomach pain.

Leaves: contain essential oils, used as a condiment.

Roots: detoxicant; treatment of stomachache; expectorant.

7. Pha – ya – yo

Scientific name *Clinacanthus nutans* (Burm.f.) Lindau.

Family ACANTHACEAE

Vernacular names Phak – man – kai, Phak – lin – khiat (Chiang Mai) Pha – ya – plong – kham (Lampang), Pha – ya – plong – dam, Pha – ya – plong – thong (Central), Pho – so – chang (Karen – Mae Hong Son).

Botanical description Slender shrub; leaves simple, opposite, narrowly elliptic oblong or lanceolate. Flowers dull red with green base, in terminal dense cymes. Capsules oblong, 4 – seeded.

Parts used and uses

Whole plants: detoxicant; refrigerants.

8. Ban – yen

Scientific name *Mirabilis jalapa* Linn.

Family NYCTAGINACEAE

Vernacular names Chan – yam, Chum – yam, Tam – yam (Northern)

Botanical description Herb, up to 1 m high. Leaves simple, alternate, ovate or cordate. Flowers white, yellow or pink; sweet scented in the evening; calyx green,

persistent; corolla funnel shaped, 3 cm in diameter. Fruits globose, 1 – seeded.

Parts used and uses

Roots: Contain trigonelline alkaloid, used as laxative.

Leaves: As a poultice, topically used for itching, abscesses; orally, diaphoretic, antipyretic and refrigerant.

Seed: Skin – feel emollient, remove freckle and treatment of melasma.

9. Ma – khum – dee – khwaai

Soap berry, Soap nut tree

Scientific name *Sapindus emerginatus* Wall. Syn.: S. *rarak* DC.

Family SAPINDACEAE

Vernacular names Cha – sae, Sa – la – de (Karen – Mae Hong Son) Makhum dee khwaai (Central, Peninsular) Masak, Sompoi thet (Northern)

Botanical description A medium sized tree, 10 – 30 m high. Leaves even pinnate, alternate; leaflets ovate or oblong – ovate, 5 – 7 cm wide, 10 – 14 cm long. Inflorescence in terminal panicle, unisexual monoecious; flowers white. Fruit fleshy schizocarp globose.

Parts used and uses

Fruit: externally used as antidandruff, skin tonic treatment of infected seborrhoea; contains saponin which inhibits growth of ringworm fungi. Preparation: crush and soak in water, wash face and shampoo hair.

10. Fa – tha – lai – chon

Scientific name *Andrographis paniculata* Wall. Ex Nees.

Family ACANTHACEAE

Vernacular names Fa – tha – lai (Bangkok) Ya – kan – ngu (Songkhla)

Botanical description Perennial herb, 30 – 60 cm high, very bitter; stem acutely quadrangular. Leaves simple, opposite decussate, ovate or lanceolate, 2 – 3 cm wide, 4 – 8 cm long. Inflorescence in terminal panicle and axillary raceme; flowers small, white with violet markings. Fruit capsule, compressed; retinacula distinct.

Parts used and uses

Whole plants: Alcoholic extract, as antidysentery, antidiarrheal, relieve symptoms of insect bit (orally and topically).

Leaves and aerial part: Collect before blooming; antidiarrheal, remedy for sore throat, fever, as bitter tonic. In animal tests,

alcoholic extract shows potential in reducing fever. Clinical trial on treatments of diarrhea and amoebic dysentery prove effectiveness equal to tetracycline (antibiotics); many research paper on treatment of sore throat, result both positive and negative. Dose: 1 – 3 handfuls of fresh leaves, boil, drink 3 times before meals; dried leaves, grind to powder and make a pill about 0.8 cm in diameter, use honey as binder, take 3 – 6 pills 3 – 4 times before meals and at bedtime. Now commercially available as 250 and 500 mg capsules; take 4 and 2 capsules 3 times a day before meals, respectively. Caution: may be emetic.

11. Som poi

Scientific name *Acacia concinna* (Willd.) DC.
Family FABACEAE
Botanical description Liana or scandent shrub with thorny stem, branch and leaf, 2 – 5 m high. Leaves bipinnate, alternate; pinnae 8 – 12 pairs, 7 – 20 cm long; leaflets 9 – 25 pairs, linear or oblong. Inflorescence in terminal and axillary, compound globose heads; flowers yellowish white. Pod thick, dark brown, juicy, rugose when dry.

Parts used and uses
Dried pod: Expectorant. Blend with water, induce foam; contains up to 28.8 % saponin, such as acacinins A, B, C, D and E; shampoo hair as antidandruff; bath tonic for woman after delivery; soak cotton and apply to skin diseases.

12. Ngueak – pla – mo

Sea Holly
Scientific name *Acanthus ebracteatus* Vahl., *A. ilicifolius* Linn.
Family ACANTHACEAE
Vernacular names Kam – mo – le (Krabi), Cha – kreng, Nang – kreng, E – kreng (Central)
Botanical description Erect shrub, 0.5 – 1.0 m high. Often found in mangrove forest, stem spiny or not, solid, greyish green, 4 spines each node. Leaves simple, opposite, ovate, elliptic or oblong, 3 – 7 cm wide, 6 – 20 cm long, with or without marginal spines, always with apical spine. Inflorescence in terminal spike; flowers white, 2 – lipped often with bluish tip and yellow central keel, violet

with yellow median band in *A. ilicifolius* Linn. Fruit ovoid – oblong capsule, up to 2 cm long.

Parts used and uses

Leaves: As a poultice for artritis; analegesic; for treatment of skin disease; as bath for antipruritic; inflammatory skin disorder; expectorant, neurotonic.

Roots: Expectorant; antitussive; antiasthmatic; treatment of leukorrhea.

Seeds: As a poultice for abscesses; as a decoction for antitussive; anthelmintic.

Whole plants: Anticancer.

Juice from crushed leaves: Hair tonic.

13. Kha – min – Chan

Turmeric

Scientific name *Curcuma longa* Linn. Syn.: *C. domestica* Valeton

Family ZINGIBERACEAE

Vernacular names Kha – min (General), Kha – min – kaeng, Kha – min – yok, Kha – min – hua (Chiang Mai), Khi – min, Min (Peninsula), Ta – yo (Karen – Kumphaeng Phet), Sa – yo (Karen – Mae Hong – Son).

Botanical description Erect, terrestrial, perennial herb, 30 – 90 cm high; rhizome tuberous, orange – yellow, aromatic. Leaves simple,

Parts used and uses

Rhizome: Treatment of mosquito bite, skin diseases, peptic ulcer, intestinal ulcer, dyspepsia, and indigestion; anti flatulence; antibacterial. Curcumin also inhibit bacterial growth. Externally used for itching and infected wounds.

14. Khing

Ginger

Scientific name *Zingiber officinale* Rosc.

Family ZINGIBERACEAE

Botanical description Rhizomatous herb, 0.3 – 1 m high, having horizontal, white or pale yellow, fleshy and aromatic rhizome; and stem leafy. Leaves simple, alternate, lanceolate – oblong, 1.5 – 2 cm wide, 15 – 20 cm long. Inflorescence in terminal spike from apex of rhizome; flowers greenish yellow; bracteoles pale green. Fruit loculicidal capsule, 3 – lobular.

Parts used and uses

Flower, rhizome: As skin tonic.

15. Mang – khut

Mangosteen
Scientific name *Gercinia mangostana* Linn.
Family GUTTIFERAE
Botanical description Tree, trunk straight, bark brownish black, young branches 4 – angular, with yellow sap. Leaves simple, opposite, ovate or oblong, thick, dark green, shining on the upper surface. Flowers pink, unisexual. Fruits rounded; calyx persistent; pulp white, juicy.
Parts used and uses
Stems, root, fruits: Anti dysentery.
Dried fruit peels: Astringent; anti dysentery, anti fungal; anti – inflammatory. Commercialized as cosmetic cream for acne, black scars on the face and boils.
Roots: As a decoction, for normalize menstruation.

2.4.3 The Abhaibhubejhr Herbal Cosmetic Products

The herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital are put into 8 categories as follows:

- **Tamarind Herbal Cleansing Cream** (Natural AHA from Tamarind)
  Ingredients : Tamarind pulp, Turmeric rhizome, milk and honey.
  Uses : Soften skin and increase elasticity. Invigorate tired, wrinkled and aging skin. For oily skin, add to normal facial cleansing cream, rub gently for 1 – 2 minutes.

- **Turmeric Liquid Soap** (Curcuma longa rhizome)
  Ingredients: Turmeric oil, Texapon – N, Coconut fatty acid, Sodium chloride and water.
  Uses : Antiseptic, skin cleanser, emollient and tonic, reduce allergic reaction, especially for sensitive skin.

- **Turmeric Soap** (Curcuma longa rhizome)
  Ingredients: 0.5 gm. Turmeric powder, 0.5 % Turmeric oil.
  Uses : Antiseptic, skin cleanser, emollient and tonic, reduce allergic reaction, especially for sensitive skin.

- **Mangosteen Peel Soap** (Garcinia mangostana)
  Ingredients: 2 gm. of mangosteen peel powder.
  Uses : Astringent, reduce skin inflammation and deodorant.

- **Scalp Treatment Emblic Myrobalan and Myrobalan Wood**
  Uses : Enrich and nourish for oil hair types, Improving softness and shine, leaving hair manageable and full of body

- **Borapet Shampoo** (Tinospora crispa)

Ingredients: 10 % Borapet stem extract, SLES, citric and, PG, PEG, EDTA, Sodium chloride, BNPD, fragrance and water.

Uses : Tonic, improve gray hair conditioner and antidandruff.

- **Ginger Shampoo** (Zingiber officinale rhizome)

Ingredients: 10 % Ginger oil, SLES, PG, PEG, Citric acid, EDTA, Sodium chloride, BNPD, fragrance and water.

Uses : Strengthen hair follicle, stimulate blood circulation to scalp, relieve itching scalp.

- **Butterfly Pea Hair Conditioner** (Clitorea tematea flower)

Ingredients: 5 % Fresh flowers of Butterfly Pea, PG, EDTA, BNPD, Citric acid, Sodium chloride, fragrance and water.

Uses : Strengthen and keep hair soft, smooth and shiny.

2.5 Relevant Researches Related to This Study

There have been no studies on adoption of herbal cosmetic products. The study are approach this study following are some relevant studies and researches:

Jitti Rodbangyang (1986: abstract) had conducted a study on the adoption of solid waste separation by the wives of police officers in Bangkok Metropolis a case study of the central police flats, and found that

1. The wives of police officers in Bangkok Metropolis had adoption of solid waste separation at moderate level.
2. Factors affecting adoption of solid waste separation were length of residency in the central police flats and being in receipt of information about solid waste separation account for the difference in their adoption significantly at 0.05. Occupation, educational, knowledge of solid waste problems and solid waste separation, awareness of environmental problem, the opinion about solid waste separation, and beliefs and values of solid waste disposal account for the difference in their adoption significantly at 0.001.

Chutima Ungphakorn (1996: abstract) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that

1. Housewives in Bangkok Metropolis had adoption of the practice of using recycled paper products at an intermediate level.
2. Factors affecting adoption of the practice of using recycled paper products were opinion about recycled paper products, experience of recycled paper products, education attainment, occupation, length of period of residency in Bangkok Metropolis, knowledge on recycled paper products, and being in receipt of information about recycled paper products.

Rudeekorn Yarnsungvornchai (1994: abstract) had conducted a study on factors affecting agriculturalists' adoption of herbs as pesticide: a case study of Soidown District Chantaburi Province, and found that

1. Most of the farmers accepted the use of herbal pesticide at the intermediate level.
2. Factors affecting the use of herbs as pesticide were the duration of the use of herbal pesticide, the level of knowledge for recognizing danger in using chemical pesticide, viewpoints on the use of herbs as pesticide, ownership or rights in land factors, and age.

Nongnuch Impitak (1997: abstract) had conducted a study on the adoption of green products for environmental conservation: a case study of nursing students in the central and eastern regions of Thailand, and found that

1. Nursing students had adoption of green products for environmental conservation at an intermediate level.
2. Factors affecting adoption of green products for environmental conservation were a positive attitude of green products, a daily behavior for environmental conservation, awareness of environmental problems and health value.

Tippawan Kunsisut (1997: abstract) had conducted study on the adoption and use of energy efficient appliances by people living in Bangkok Metropolitan area : A case study of public corporation with EGAT's electricity conservation program, and found that

1. People living in Bangkok Metropolitan area had adoption and use of energy efficient appliances at moderate level.
2. Factors affecting adoption and use of energy efficient appliances were access to energy efficient appliances of public corporation with EGAT's electricity conservation program information, attitude towards power conservation, knowledge of features of energy efficient appliances, sex, age, and knowledge of power saving appliances and program of public corporation on energy conservation.

Kanokwan Yoowong (1998: abstract) had conducted a study of farmers' adoption of pesticide – free vegetable cropping, and found that

1. Farmers had adoption of pesticide – free vegetable cropping at medium level.
2. Factors affecting farmers' adoption of pesticide – free vegetable cropping were pesticide – free vegetable cropping information receiving, knowledge on pesticide – free vegetable cropping, and attitude of pesticide – free vegetable cropping.

2.6 Relevant Researches Related to Variables

Level of Adoption

Rudeekorn Yarnsungvornchai. (1994:109). had conducted a study on factors affecting agriculturalists' adoption of herbs as pesticide: a case study of Soidown District Chantaburi Province, and found that most of the farmers accepted the use of herbal pesticide at the intermediate level.

Chutima Ungphakorn (1996:111) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that housewives in Bangkok Metropolis had adoption of the practice of using recycled paper products at an intermediate level.

Nongnuch Impitak (1997:166) had conducted a study on the adoption of green products for environmental conservation: a case study of nursing students in the central and eastern regions of Thailand, and found that nursing students had adoption of green products for environmental conservation at an intermediate level.

Therefore, adoption of herbal cosmetic products is hypothesized at a moderate level

Gender

Prathana Yuktiratana (1996:116) had conducted a study on the opinion towards the products from alternative agriculture of people in Bangkok Metropolis, and found that the different sex made significant difference to opinion towards the products from alternative agriculture (at $p < 0.001$).

Umadee Tanaponpadungkul (1995:155) had conducted a study of factors affecting the acceptance of solid wastes separation case study of condominium residents in Bangkok, and found that the different sex made significant difference to acceptance of solid wastes separation that acceptance of female condominium residents show higher than male (at $p < 0.01$).

Therefore, gender is hypothesized to make difference to the adoption of herbal cosmetic products.

Age

Wilasinee Wongprasert (1986:56) had conducted a study on the adoption of using safety helmets of the motorcycle riders in Bangkok Metropolis, and found that ages are significantly related to the adoption of using safety helmets (at $p < 0.05$).

Manorot Sittanon (1997:93) had conducted a study on the adoption on waste treatment methods of industrial entrepreneurs : a case study in Amphoe Samphran Nakhornpathom Province, and found that the different age made significant difference to the adoption on waste treatment methods (at $p < 0.001$).

Therefore, age is hypothesized to make difference to the adoption of herbal cosmetic products.

Education

Jitti Rodbangyang (1986: 144) had conducted a study on the adoption of solid waste separation by the wives of police officers in Bangkok Metropolis a case

study of the central police flats, and found that the different education of housewives made significant difference to adoption of solid waste separation (at $p < 0.001$).

Chutima Ungphakorn (1996:112) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that the different education made significant difference to adoption of the practice of using recycled paper products (at $p < 0.01$).

Manorot Sittanon (1997:93) had conducted a study on the adoption on waste treatment methods of industrial entrepreneurs : a case study in Amphoe Samphran Nakhornpathom Province, and found that the different education made significant difference to the adoption on waste treatment methods (at $p < 0.01$).

Therefore, education is hypothesized to make difference to the adoption of herbal cosmetic products.

Occupation

Jitti Rodbangyang (1986:144) had conducted a study on the adoption of solid waste separation by the wives of police officers in Bangkok Metropolis a case study of the central police flats, and found that the different occupation of housewives made significant difference to adoption of solid waste separation (at $p < 0.001$).

Wilasinee Wongprasert (1986:56) had conducted a study on the adoption of using safety helmets of the motorcycle riders in Bangkok Metropolis, and found that the different occupations made significant difference to adoption of using safety helmets (at $p < 0.05$).

Sirinart Soontornsorn (1994:123) had conducted a study on the adoption of household sewage treatment of the people in Nakhornpathom municipal zone, and found that the different occupations made significant difference to adoption of household sewage treatment (at $p < 0.05$).

Piyarat Nimsakul (1996:120) had conducted a study on housewives' preferences for organically grown vegetables: a case study at Donmuang District in Bangkok Metropolis, and found that housewives who were housewives preferences for organically grown vegetables more than employees, government official, State enterprise official, merchant, and other did (at $p < 0.05$.)

Therefore, occupation is hypothesized to make difference to the adoption of herbal cosmetic products.

Income

Wilasinee Wongprasert (1986:70) had conducted a study on the adoption of using safety helmets of the motorcycle riders in Bangkok Metropolis, and found

that the different incomes made significant difference to adoption of using safety helmets (at $p < 0.05$).

Sirinart Soontornsorn (1994:123) had conducted a study on the adoption of household sewage treatment of the people in Nakhornpathom municipal zone, and found that the monthly incomes had a positive relation to adoption of household sewage treatment.

Chutima Ungphakorn (1996:112) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that the different income made significant difference to adoption of the practice of using recycled paper products (at $p < 0.01$).

Therefore, income is hypothesized to make difference to the adoption of herbal cosmetic products.

Convenience to buy herbal cosmetic products

Everett M. Roger and F. Floyd Shoemaker (1971:22) had explained the characteristics of innovations that convenience is important components of measured in the degree of relative advantage.

Piyarat Nimsakul (1996:123) had conducted a study on housewives' preferences for organically grown vegetables: a case study at Donmuang District in Bangkok Metropolis, and found that that distance to organically grown vegetables locality made insignificant difference to preferences for organically grown vegetables, because of the traffic jam and rough road made inconvenient to buy organically grown vegetables.

Therefore, Convenience to buy herbal cosmetic products is hypothesized to make difference to the adoption of herbal cosmetic products.

Experience in use of herbal products

Nipa Likitprasirt (1989: abstract) had conducted a study on factors influencing the acceptance of 1 % abate sand granule for controlling aedes mosquito, and found that adopter at high level had experience of abate sand granule used more than adopter at low level a significantly at $p < 0.01$.

Chutima Ungphakorn (1996:93) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that the different experience of recycled paper products made significant difference to adoption of the practice of using recycled paper products (at $p < 0.001$).

Prathana Yuktiratana (1996:116) had conducted a study on the opinion towards the products from alternative agriculture of people in Bangkok Metropolis, and found that the different experience about the products from alternative agriculture

made significant difference to opinion towards the products from alternative agriculture (at $p < 0.001$).

Therefore, experience in use herbal products is hypothesized to make difference to the adoption of herbal cosmetic products.

Experience of problems from the use of cosmetics

Prasan Tangsikaboot (1990:abstract) had conducted a study on psychosocial aspects determining the farmers utilization behavior of insecticides for vegetation growing in suburb, and found that the farmers themselves experience of affect by insecticides, the experience of seeing the members in their families have been affected by insecticides and experience of its effect on their neighbours made significant difference insecticides utilization behavior (at $p < 0.001$).

Nitaya Suriyachareorn (1990:abstract) had conducted a study on farmers' behaviors regarding the insecticide utilization at Ban Phaeo District, Samut – Sakhon Province, and found that the difference experience with harmful effect of insecticides made a significant difference to insecticide utilization behavior (at $p < 0.05$).

Therefore, experience of problems from the use of cosmetics is hypothesized to make difference to the adoption of herbal cosmetic products.

Access to herbal cosmetic product information

Chutima Ungphakorn (1996:114) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that the different being in receipt of information about recycled paper products made a significant difference to adoption of the practice of using recycled paper products (at $p < 0.001$).

Piyarat Nimsakul (1996:124) had conducted a study on housewives' preferences for organically grown vegetables: a case study at Donmuang District in Bangkok Metropolis, and found that that housewives who percept of information had preferences for organically grown vegetables more than housewives who non percept of information did (at $p < 0.05$.)

Kanokwan Yoowong (1998: abstract) had conducted study a study of farmers' adoption of pesticide – free vegetable cropping, and found that the different level of pesticide – free vegetable cropping information receiving made a significant difference to adoption of pesticide – free vegetable cropping (at $p < 0.05$).

Therefore, Access to herbal cosmetic product information is hypothesized to make difference to the adoption of herbal cosmetic products.

Knowledge of herbal cosmetic products

Jitti Rodbangyang (1986:144) had conducted a study on the adoption of solid waste separation by the wives of police officers in Bangkok Metropolis a case study of the central police flats, and found that housewives who had the difference knowledge of solid waste problem and the solid waste separation made a significant difference to adoption of solid waste separation (at $p < 0.001$).

Chutima Ungphakorn (1996:113) had conducted a study on the adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis, and found that housewives who had the difference knowledge of recycled paper products made a significant difference to adoption of the practice of using recycled paper products (at $p < 0.001$)

Therefore, Knowledge of herbal cosmetic products is hypothesized to make difference to the adoption of herbal cosmetic products.

Attitude toward herbal cosmetic products

Kanokwan Yoowong (1998: abstract) had conducted study a study of farmers' adoption of pesticide – free vegetable cropping, and found that the difference level of attitude toward pesticide – free vegetable cropping made a significant difference of adoption of pesticide – free vegetable cropping (at $p < 0.05$).

Nongnuch Impitak (1997:169) had conducted a study on the adoption of green products for environmental conservation: a case study of nursing students in the central and eastern regions of Thailand, and found that attitude toward green products for environmental conservation by nursing students made a significant positive correlation on adoption of green products for environmental conservation (at $p < 0.001$).

Therefore, attitude toward herbal cosmetic products is hypothesized to make difference to the adoption of herbal cosmetic products.

Valuation of health

Nitaya Suriyachareorn (1990:87) had conducted a study on farmers' behaviors regarding the insecticide utilization at Ban Phaeo District, Samut – Sakhon Province, and found that the difference health values made a significant difference to insecticide utilization behavior (at $p < 0.05$).

Piyarat Nimsakul (1996:120) had conducted a study on housewives' preferences for organically grown vegetables: a case study at Donmuang District in Bangkok Metropolis, and found that housewives who had high level of value to the health preferences for organically grown vegetables more than housewives who had medium level and low level of value to the health did (at $p < 0.05$.)

Therefore, valuation of health is hypothesized to make difference to the adoption of herbal cosmetic products.

Awareness of environment

Jitti Rodbangyang (1986:144) had conducted a study on the adoption of solid waste separation by the wives of police officers in Bangkok Metropolis a case study of the central police flats, and found that the difference awareness of environmental problem had positive correlation on adoption of solid waste separation and made a significant difference to adoption of solid waste separation (at $p < 0.001$).

Nongnuch Impitak (1997:169) had conducted a study on the adoption of green products for environmental conservation: a case study of nursing students in the central and eastern regions of Thailand, and found that awareness of environmental problems by nursing students made a significant positive correlation on adoption of green products for environmental conservation (at $p < 0.001$).

Therefore, awareness of environment is hypothesized to make difference to the adoption of herbal cosmetic products.

Modernization

Wilasinee Wongprasert (1986:63) had conducted a study on the adoption of using safety helmets of the motorcycle riders in Bangkok Metropolis, and found that the different modernization made a significant difference to adoption of using safety helmets (at $p < 0.05$).

Utis Gerdpial (1986:102) had conducted a study on feasibility study on the adoption of household water filter in rural area, and found that those who had modernization at high level were acceptability of household water filter more than the population under study had modernization at medium level and low level did respectively. Based on statistical test, the different modernization made a significant difference to acceptability of household water filter (at $p < 0.001$).

Piyarat Nimsakul (1996:120) had conducted a study on housewives' preferences for organically grown vegetables: a case study at Donmuang District in Bangkok Metropolis, and found that housewives who had more modernization preferences for organically grown vegetables more than housewives who had less modernization did (at $p < 0.05$).

Therefore, modernization is hypothesized to make difference to the adoption of herbal cosmetic products.

CHAPTER III

MATERIALS AND METHODS

In this study, survey research with questionnaire investigations and in-depth interviews were used to analyze the adoption of herbal cosmetic products: a case study of the herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital in Prachinburi province.

3.1 Population

3.1.1 In Quantitative Research, the herbal cosmetic products customers of the herbal shop of Chaophaya Abhaibhubejhr Hospital in Prachinburi province.

3.1.2 In Qualitative Research,

1) The producers: Director of Chaophaya Abhaibhubejhr Hospital, Pharmacist and sell assistant of herbal shop.
2) The members of herbal shop
3) The customers

3.2 Sample Size and Sampling

Sample size calculated from 72,000 customers' bill that bought herbal cosmetic products since April 1999 – June 2000 from the herbal shop of Chaophaya Abhaibhubejhr Hospital.

3.2.1 Sample Size

In this study, the sample size of the total 72,000 herbal cosmetic products customers, was computed by Taro Yamane formula:

$$n = \frac{N}{1 + Ne^2}$$

n = sample size
N = population
e = sampling error (at $p < 0.05$)

$$n = \frac{72,000}{1 + 72,000(0.05)^2}$$

$$= \frac{72,000}{181}$$

$$= 397.79$$

3.2.2 Sampling

According to accidental sampling, the 400 cases of sample size were selected from the herbal cosmetic product customers of the herbal shop of Chaophaya Abhaibhubejhr Hospital.

3.3 Instruments

3.3.1 In Quantitative Research

1) Questionnaire Developing Process.

To construct questionnaires, the researcher worked on the following steps:

1. Reviewed the literature related to the study by studying from texts, journals, documentary and researches.
2. Constructed questionnaires that cover all aspects of the study, consisted of 11 parts as follows:

Part I : People's social – demographic characteristics and closed – ended questions about convenience to buy herbal cosmetic products.

Convenience	=	1	score
Inconvenience	=	0	score

Part II : Closed – ended questions about experience in use herbal products.

Experience	=	1	score
Inexperience	=	0	score

Part III : Closed – ended questions about experience of problems from the use of cosmetics.

Experience	=	1	score
Inexperience	=	0	score

Part IV : Closed – ended questions about access to herbal cosmetic product information.

More 4 times a month	=	4	score
3 – 4 times a month	=	3	score
Once – twice a month	=	2	score
Once a month	=	1	score
Never	=	0	score

Part V : Closed – ended questions about knowledge on the herbal cosmetic products.

Correct answer	=	1	score
Wrong answer	=	0	score

Part VI : Closed – ended questions about attitude toward herbal cosmetic products.

	Positive	Negative
Strongly agree	5 score	1 score
Agree	4 score	2 score
Uncertain	3 score	3 score
Disagree	2 score	4 score
Strongly disagree	1 score	5 score

Part VII: Closed – ended questions about valuation of health.

	Positive	Negative
Always	3 score	1 score
Often	2 score	2 score
Never	1 score	3 score

Part VIII : Closed – ended questions about awareness of environment.

	Positive	Negative
Strongly agree	5 score	1 score
Agree	4 score	2 score
Uncertain	3 score	3 score
Disagree	2 score	4 score
Strongly disagree	1 score	5 score

Part IX : Closed – ended questions about modernization.

	Positive	Negative
Strongly agree	5 score	1 score
Agree	4 score	2 score
Uncertain	3 score	3 score
Disagree	2 score	4 score
Strongly disagree	1 score	5 score

Part X : Closed – ended questions about adoption of herbal cosmetic products.

Yes	=	3	score
Uncertain	=	2	score
No	=	1	score

Part XI Open – ended questions about problems, obstacles and suggestions related the herbal cosmetic products

According to measurement criteria of Ministry of education (as cited in Nipa Manunpichu, 1988:79) it was applied to classify level of experience in use herbal products, experience of problems from the use of cosmetics, access to herbal cosmetic product information, knowledge of herbal cosmetics products, attitude toward herbal cosmetics products, valuation of health, awareness of environment, modernization and adoption of herbal cosmetic products as follows:

70 % and upper	=	high level
60 – 69 %	=	moderate level
59 % and lower	=	low level

2) Pretest of the Questionnaire

According to the suggestion and recommendations of the experts, the instrument was revised and adjusted to its final form. The pretest was done with a total 30 person who used the herbal cosmetics products that do not buy from the herbal shop in Chaophraya Abhaibhubejhr Hospital.

- Reliability test for part of knowledge on the herbal cosmetics products was evaluated by Split – Half Method of Spearman & Brown's Correction Factor Formula:

$$r_{tt} = \frac{2r_{1/2\,1/2}}{1+r_{1/21/2}}$$

r_{tt} = Reliability of the whole questionnaire
$r_{1/21/2}$ = Reliability of half of questionnaire

- Reliability test for part of attitude of the herbal cosmetics products, value of health, awareness of environment, modernization and adoption of herbal cosmetic products were evaluated by Coefficient of Alpha: α by Cronbach Formula:

$$r_{tt} = \left[\frac{k}{k-1}1-\frac{\sum s_i^2}{s_x^2}\right]$$

r_{tt} = Reliability of the questionnaire
k = Number of items
$\sum s_1^2$ = Sum of variance of a single item
s_1^2 = Variance of all item

The results of reliability test as follow:

- The reliability of knowledge of herbal cosmetics products was 0.8211.
- The reliability of attitude toward herbal cosmetics products was 0.8218.
- The reliability of valuation of health was 0.7436.
- The reliability of awareness of environment was 0.7495.
- The reliability of modernization was 0.7959.
- The reliability of adoption of herbal cosmetic products was 0.7312.

After the pretest, composed the questionnaires and approved to the content validity by the thesis supervising committee.

3.3.2 In Qualitative Research

The question for In-depth Interviews were classified into 3 groups, Items were related to:

1) History of the herbal cosmetic products
2) Concept of herbal cosmetic usage
3) Development of herbal cosmetic products
4) Policy of herbal cosmetic product promotion
5) The herbal cosmetic products
6) The adoption of herbal cosmetic products
7) Problems, obstacles and suggestions

3.4 Data Collection

3.4.1 Quantitative Research, the researcher together with 5 trained assistants from Faculty of Social Sciences and Humanities, Mahidol University and Public Health office of Muang district in Prachinburi Province went collecting data within 1 November 2000 – 15 February 2001.

3.4.2 Qualitative Research, the researcher was collecting data by In-depth interview.

3.5 Data Analysis

3.5.1 Quantitative Data Analysis

After the questionnaires were collected, the completed were used in data coding according to coding instruction. The data were recorded on computer. The statistical analysis was used in Statistical Package for the Social Science ($SPSS^+$).

3.5.2 Qualitative Data Analysis

The data were collected by In-depth Interview. The analysis was used descriptive approach analysis.

3.6 Statistics Used

1) The Percentage, mean and standard deviation.

2) One-way analysis of variance and t-test by breakdown dependent variable.

3) Analysis of variance (ANOVA) and multiple classification analysis (MCA) by breakdown dependent variable.

CHAPTER IV

RESULTS

Data in this study on the adoption of herbal cosmetic products a case study of the herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital in Prachinburi province were from questionnaires filled in

4.1 The Analysis of Data from Questionnaires
4.1.1 Socio – demographic Variables
4.1.2 Motive Variables
1. Convenience to buy herbal cosmetic products
2. Experience in use of herbal products
3. Experience of problems from the use of cosmetics
4. Access to herbal cosmetic product information
5. Knowledge of herbal cosmetic products
6. Attitude toward herbal cosmetic products
7. Valuation of health
8. Awareness of environment
9. Modernization

4.1.3 The adoption of herbal cosmetic products
4.1.4 The analysis of correlation of the socio – demographic variable and motive variable with the adoption of herbal cosmetic products by one-way ANOVA and t-test
4.1.5 The analysis of correlation of the socio – demographic variable and motive variable with the adoption of herbal cosmetic products by analysis of variance (ANOVA) and multiple classification analysis (MCA).
4.1.6 Problems, Obstacles and Suggestions
4.2 The Presentation of In-depth Interviews

4.1 The Analysis of Data from Questionnaires

4.1.1 Socio – demographic Variables

In the study, the results of the study showed the people socio – demographic characteristics as follows: (Table2)

Gender were Female 74.5 % and Male 25.5 %.

Age had 3 response categories: between ages 24 – 43 years old 62.5 %, 44 years old and above 19.3 %, 23 years old and below 18.2 %. The minimum age was 16 years old. The maximum age was 70 years old. The average age was 34 years old.

Occupation had 6 response categories: Government official 34.3 %, State enterprise official/company official/Employees 31.3 %, Students 17.5 %, merchant/self-employed 9.0 %, Housewives 7.5 %, and agriculturist 0.4 %.

Education had 5 response categories: Graduate Degree 43.8 %, Undergraduate level 21.4 %, High school diploma 19.0 %, Post graduate degree 10.8 %, and Primary school diploma 5.0 %.

Income had 5 response categories: earned 5,001 – 10,000 Bath 27.0 %, earned 1,000 – 5,000 Bath 25.0 %, earned 10,001 – 15,000 Bath 20.0 %, earned 15,001 – 20,000 Bath 14.5 % and earned 20,001 – 100,000 Bath 13.5 %. The minimum earn was 1,000 Bath. The maximum earn was 100,000 Bath. The average earn was 13,245 Bath.

Table 2 Number and percentage of socio – demographic variables

N = 400 Cases

Characteristics	Number	Percentage
Gender		
Male	102	25.5
Female	298	74.5
Age		
23 Years old and below	73	18.2
24 – 43 years old	250	62.5
44 years old and above	77	19.3
$\bar{X}$ = 33.62 S.D. = 10.63 Max = 70 Min = 16		
Occupation		
Government official	137	34.3
State enterprise official/Company official/Employees	125	31.3
Merchant/self – employed	36	9.0
Students	70	17.5
Housewives	30	7.5
Agriculturist	2	0.4
Education		
Primary school diploma	20	5.0
High school diploma	76	19.0
Undergraduate level	86	21.4
Graduate Degree	175	43.8
Post graduate Degree	43	10.8
Income		
1,000 – 5,000 Bath	100	25.0
5,001 – 10,000 Bath	108	27.0
10,001 – 15,000 Bath	80	20.0
15,001 – 20,000 Bath	58	14.5
20,001 – 100,000 Bath	54	13.5
$\bar{X}$ = 13,245.66 S.D. = 12,918.11 Max = 100,000 Min = 1,000		

4.1.2 Motive Variables

1. Convenience to buy herbal cosmetic products

Convenience to buy herbal cosmetic products were convenience to buy herbal cosmetic products 69.0 % and inconvenience to buy herbal cosmetic products 31.0 %. (Table 3)

Space from residence to Chaophaya Abhaibhubejhr Hospital had 5 response categories: 20 kilometers and below 49.8 %, 101 – 200 kilometers 24.8 %, 21 – 50 kilometers 17.0 %, 51 – 100 kilometers 4.4 % and 200 kilometers and above 4.0 %. The minimum space was less than 1 kilometer. The maximum space was 400 kilometers. The average space was 62.67 kilometers.

Purchasable on herbal cosmetic products were purchasable on herbal cosmetic products from other place 64.5 % and non-purchasable on herbal cosmetic products from other place 35.5 %.

Table 3 Number and percentages of people as classified by convenience to buy herbal cosmetic products

N = 400 Cases

Convenience to buy herbal cosmetic products	Number	Percentage
Convenience to buy herbal cosmetic products		
Convenience	276	69.0
Inconvenience	124	31.0
Space from residence to Chaophraya Abhaibhubejhr Hospital	199	49.8
20 kilometers and below	68	17.0
21 – 50 kilometers	18	4.4
51 – 100 kilometers	99	24.8
101 – 200 kilometers	16	4.0
200 Kilometers and above		
$\bar{X}$ = 62.67 S.D. = 78.00 Max = 400 Min = 1		
Purchasable on herbal cosmetic products		
Purchasable	258	64.5
Non – purchasable	142	35.5

2. Experience in use of herbal products

Most of people used 2 kinds of the herbal cosmetic products . The kind of herbal cosmetic products which most of people used were tamarind herbal cleansing cream, turmeric soap, mangosteen peel soap, butterfly pea hair conditioner, boraphet shampoo, turmeric liquid soap, ginger shampoo and scalp treatment emblic myrobalan and myrobalan wood respectively. Most of people used the herbal cosmetic products between 6 months and below. The minimum use was 1 month. The maximum use was 24 months. The average use was 6 months.

The cause of using the herbal cosmetic products found that most of people were convinced in indicator, the herbal cosmetic products were safe for use and most of people were confident in producer respectively. Modernization, fashion and package were the least one.

Most of people saw other people using the herbal cosmetic products 86% and never seen 14.0%. Other people used 2 kinds of the herbal cosmetic products . The kind of herbal cosmetic products which most of other people used were tamarind herbal cleansing cream, mangosteen peel soap, turmeric soap, butterfly pea hair conditioner, boraphet shampoo, turmeric liquid soap, ginger shampoo and scalp treatment emblic myrobalan and myrobalan wood respectively.

Most of people never used the herbal cosmetic products which produced by other producer 59.2% and used 40.8%, and found that at present most of people do not use the herbal cosmetic products 79.0% and still use 21%.

Most of people used the herbal products 68.8% and never used 31.2% and found that most of people used the herbal beverage, the herbal medicine and the herbal food respectively.

By categorizing the level of experience in use of herbal products, people had experience in use of herbal products at a high level 84.2 %, at a moderate level 11.5 % and at a low level 4.3 % respectively. (Table 4)

Table 4 Number and percentage of people as classified by the levels of experience in use of herbal products

N = 400 Cases

Levels of experience in use of herbal products		Number	Percentage
Low level	(1 – 12 scores)	337	84.2
Moderate level	(13 – 15 scores)	46	11.5
High level	(16 – 21 scores)	17	4.3

$\bar{X}$ = 8.15 S.D. = 3.98 Max = 20 Min = 1

3. Experience of problems from the use of cosmetics

Most of people had inexperience of problems from the use of cosmetics 69.2% and had experience of problems from the use of cosmetics 30.2%, and found that most of people had experience of problems from the use of the synthesis cosmetics, the general herbal cosmetics, and the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital respectively.

Most of people had seen other people who had problems from the use of cosmetics 51.8% and never seen 48.2%, and found that most of other people who had problems from the use of the synthesis cosmetics, the general herbal cosmetics and the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital respectively.

By categorizing the level of experience of problems from the use of cosmetics, people had experience of problems from the use of cosmetics at a low level 48.7 %, had inexperience 42.8 % and at a moderate level 8.5 % respectively. (Table5)

Table 5 Number and percentage of people as classified by the levels of experience of problems from the use of cosmetics.

N = 400 Cases

Levels of experience of problems from the use of cosmetics	Number	Percentage
Inexperience	171	42.8
Low level (1 – 2 scores)	195	48.7
Moderate level (3 – 4 scores)	34	8.5
$\bar{X}$ = 1.00 S.D. = 1.07 Max = 4 Min = 0		

4. Access to herbal cosmetic product information

In the study, the results of the study showed access to herbal cosmetic product information of 400 cases as follows: (Table6)

Access to herbal cosmetic product information : the people got the herbal cosmetic products information 87.2 % and never got 12.8 %.

Access by television : people never got 64.8 %, got once a month 22.5 %, got once – twice a month 10.2 %, got more than 4 times a month 1.5 % and got 3 – 4 times a month 1.0 respectively

Access by radio : people never got 83.7 %, got once a month 6.5 %, got once – twice a month 5.5 %, got more than 4 times a month 3.0 % and got 3 – 4 times a month 1.3 % respectively

Access by newspapers : people never got 82.0 %, got once a month 11.0 %, got once – twice a month 4.2 %, got 3 – 4 times a month 2.3 % and got more than 4 times a month 0.5 % respectively

Access by magazine : people never got 76.2 %, got once a month 12.8 %, got once – twice a month 9.5 %, got 3 – 4 times a month 1.0 % and got more than 4 times a month 0.5 % respectively

Access by advice/brochures/publications : people never got 64.0 %, got once a month 17.2 %, got once – twice a month13.0 %, got 3 – 4 times a month 3.8 % and got more than 4 times a month 2.0 % respectively.

Access by friends and relations communications : people never got 42.5 %, got once a month 26.3 %, got once – twice a month 19.5 %, got more than 4 times a month 6.2 % and got 3 – 4 times a month5.5 respectively.

Access by hospital / hospital official : people never got 63.8 %, got once a month 17.2 %, got once – twice a month 8.2 %, got 3 – 4 times a month 6.5 % and got more than 4 times a month 4.3 % respectively.

Access by other media : people never got 98.3 %, got once a month 1.0 %, got once – twice a month 0.5 % and got 3 – 4 times a month 0.3 respectively. Other media is internet.

Table 6 Number and percentage of people who gained access to herbal cosmetic product information as classified by the type of media and frequency.

N = 400 Cases

Type of media	Frequency of access to herbal cosmetic product information				
	Never	Once a month	Once – twice a month	3 – 4 times a month	More than 4 times a month
Television	259(64.8)	90(22.5)	41(10.2)	4(1.0)	6(1.5)
Radio	335(83.7)	26(6.5)	22(5.5)	5(1.3)	12(3.0)
Newspaper	328(82.0)	44(11.0)	17(4.2)	9(2.3)	2(0.5)
Magazine	305(76.2)	51(12.8)	38(9.5)	4(1.0)	2(0.5)
Advice / Brochures / Publications	256(64.0)	69(17.2)	52(13.0)	15(3.8)	8(2.0)
Friends and Relations Communications	170(42.5)	105(26.3)	78(19.5)	22(5.5)	25(6.2)
Hospital / Hospital official	255(63.8)	69(17.2)	33(8.2)	26(6.5)	17(4.3)
Other (i.e. Internet)	393(98.2)	4(1.0)	2(0.5)	1(0.3)	0(0.0)

The requirements of additional information of the herbal cosmetic products : Most of people accepted 93.5% and refused 6.5%, and found that most of people requirements of additional information of the herbal cosmetic products by Advice / Brochures / Publications 24.5%, Various of media 23.0%, Television 17.0%, Magazine 7.3%, Hospital / Hospital official 7.0%, Friends and Relations Communications 6.8%, Newspapers 4.2%, Radio 2.2% and Other media (i.e. Internet) 1.5% respectively. (Table 7)

Table 7 Number and percentage of people as classified by requirements of additional information ofthe herbal cosmetic products and the type of media and frequency.

N = 400 Cases

Requirements of additional information of the herbal cosmetic products	Number	Percentage
Requirements of additional information of the herbal cosmetic products		
Accept	374	93.5
Refuse	26	6.5
Type of media		
Television	68	17.0
Radio	9	2.2
Newspapers	17	4.2
Magazine	29	7.3
Advice / Brochures / Publications	98	24.5
Friends and Relations Communications	27	6.8
Hospital / Hospital official	28	7.0
Other media	6	1.5
Various of media	92	23.0

By categorizing the level of access to herbal cosmetic product information, people access to herbal cosmetic product information at a low level 87.2 % and never got the herbal cosmetic products information 12.8 %. (Table 8)

Table 8 Number and percentage of people as classified by the levels of access to herbal cosmetic product information.

N = 400 Cases

Levels of access to herbal cosmetic product information	Number	percentage
Never	51	12.8
Low level (1 – 18 scores)	349	87.2
$\bar{X}$ = 4.12 S.D. = 4.02 Max = 17 Min = 0		

4. Knowledge of herbal cosmetic products

In the study, the results of the study showed knowledge of herbal cosmetic products of 400 cases as follows: (Table 9)

1. Herbal plants in herbal cosmetic products are easily to find.83.5 % of people got correct answers and 16.5 % got wrong ones.
2. Herbal cosmetic products are general cosmetics that unnecessary to registered for production and sale. 81.0 % of people got wrong answers and 19.0 % got correct ones.

3. Turmeric has effect of wounds healing. 70.0 % of people got correct answers and 30.0 % got wrong ones.

4. The effect of mangosteen peel can inhibit bacteria. 85.2 % of people got correct answers and 14.8 % got wrong ones.

5. The properties of AHA in Tamarind Herbal Cleansing Cream can remove cell and rebuild cell that AHA is reducible wrinkle and spotty facial skin. 89.8 % of people got correct answers and 10.2 % got wrong ones.

6. Herbal cosmetic products are innovation so they are not Thai wisdom. 80.2 % of people got correct answers and 19.8 % got wrong ones.

7. It's necessary to use many quantity of herbal cosmetic products because it is inefficient if used a little quantity. 77.2 % of people got correct answers and 22.8 % got wrong ones.

8. The using of herbal cosmetic products are not allergic for users. 73.8 % of people got correct answers and 26.2 % got wrong ones.

9. The properties of herbal cosmetic products are different from the properties of using herbs for beauty of Thai people in post. 52.3 % of people got correct answers and 47.7 % got wrong ones.

10. Ginger shampoo has high efficiency in cleansing. People who have weakened hair root should not use because it makes falling hair. 60.5 % of people got correct answers and 39.5 % got wrong ones.

11. The using of tamarind herbal cleansing cream should not used continuously because AHA makes dry facial skin. 66.5 % of people got correct answers and 33.5 % got wrong ones.

12. The continual using of herbal cosmetic products for a long time is hazard. 82.5 % of people got correct answers and 17.5 % got wrong ones.

Table 9 Number and percentage of people as classified by knowledge of herbal cosmetic products.

N = 400 cases

Questions	Number	percentage
1. Herbal plants in herbal cosmetic products are easily to find.		
Correct	334	83.5
Wrong	66	16.5
2. Herbal cosmetic products are general cosmetics that unnecessary to registered for production and sale.		
Correct	76	19.0
Wrong	324	81.0
3. Turmeric has effect of wounds healing.		
Correct	76	19.0
Wrong	324	81.0
4. The effect of mangosteen peel can inhibit bacteria.		
Correct	341	85.2
Wrong	59	14.8

Table 9 Number and percentage of people as classified by knowledge of herbal cosmetic products. (Cont.)

N = 400 cases

Questions	Number	Percentage
5. The properties of AHA in Tamarind Herbal Cleansing Cream can remove cell and rebuild cell that AHA is reducible wrinkle and spotty facial skin.		
Correct	359	89.8
Wrong	41	10.2
6. Herbal cosmetic products are innovation so they are not Thai wisdom.*		
Correct	321	80.2
Wrong	79	19.8
7. The using of herbal cosmetic products are necessary use many quantity because it is no efficiency if used a little quantity.*		
Correct	309	77.2
Wrong	91	22.8
8. The using of herbal cosmetic products do not allergy for user.*		
Correct	295	73.8
Wrong	105	26.2
9. The properties of herbal cosmetic products are different from the properties of using herbs for beauty of Thai people in post.*		
Correct	209	52.3
Wrong	191	47.7
10. Ginger shampoo has high efficiency in cleansing. People who have weakened hair should not use because it makes falling hair.*		
Correct	242	60.5
Wrong	158	39.5
11. The using of tamarind herbal cleansing cream should not used continuously because AHA makes dry facial skin.*		
Correct	266	66.5
Wrong	134	33.5
12. The continual using of herbal cosmetic products for a long time is hazard.*		
Correct	330	82.5
Wrong	70	17.5

notes : * negative items

By categorizing the level of knowledge of herbal cosmetic products, people had knowledge about the herbal cosmetic products at a high level 56.5 %, at a moderate level 26.0 % and at a low level 17.5 % respectively. The average score was 8.40. (Table10)

Table 10 Number and percentage of people as classified by the levels of knowledge of herbal cosmetic products.

N = 400 Cases

Levels of knowledge of herbal cosmetic products		Number	Percentage
Low level	(0 – 6 scores)	70	17.5
Moderate level	(7 – 8 scores)	104	26.0
High level	(9 – 12 scores)	226	56.5

$\bar{X}$ = 8.40 S.D. = 2.10 Max = 12 Min = 0

5. Attitude toward herbal cosmetic products

In the study, the results of the study showed attitude toward herbal cosmetic products of 400 cases as follows: (Table 11)

1. "Herbal cosmetic products are developed to easily using form." 57.2 % agreed, 39.5 % strongly agreed, 3.0 % uncertain and 0.3 disagreed respectively.
2. "Always using herbal cosmetic products is dangerous" 45.0 % uncertain, 40.2 disagreed, 9.5 % strongly disagreed, 3.8 agreed and 1.5 % strongly agreed respectively.
3. "Using of herbal cosmetic products is outmoded." 57.8 % disagreed, 33.8 % strongly disagreed, 5.0 % uncertain, 1.7 agreed and 1.7 % strongly agreed respectively.
4. "Synthesis cosmetic products are safe than the herbal cosmetic products." 43.5 % disagreed, 25.2 % uncertain, 21.2 % strongly disagreed 7.8 % agreed and 2.3 % strongly agreed respectively.
5. "The properties of synthesis cosmetic products are better than herbal cosmetic products because they are more expensive." 49.0 % disagreed, 28.4 strongly disagreed, 15.8 % uncertain, 6.0 % agreed and 0.8 strongly agree respectively.
6. "Herbal cosmetic products increase income to agriculturist." 46.8 % agreed, 46.3 % strongly agreed, 5.7 % uncertain, 0.8 % strongly disagreed and 0.5 % disagree respectively.
7. "Using of herbal cosmetic products is one expedient of solution of economic crisis." 49.2 % agreed, 39.5 strongly agreed, 8.3 % uncertain, 2.0 % disagreed and 1.0 % strongly disagreed respectively.
8. "The properties of most of herbal cosmetic products are overrated." 41.0 % disagreed, 39.5 % uncertain, 10.5 % agreed, 8.0 % strongly disagreed and 1.0 % strongly agreed respectively.
9. "Using of herbal cosmetic products should be promoted." 46.8 % strongly agreed, 45.4 % agreed, 5.8 % uncertain, 1.2 % disagreed and 0.8 strongly disagreed respectively.
10. "Herbal cosmetic products are inappropriate for teenagers." 54.8 % disagreed, 28.2 % strongly disagreed, 12.5 % uncertain, 3.3 % agreed and 1.2 % strongly agreed respectively.

11. "Using of herbal cosmetic products is fashion." 46.8 % disagreed, 22.5 % uncertain, 16.2 % strongly disagreed 13.7 % agreed and 0.8 strongly agreed respectively.

12. "Herbal cosmetic products are replaced with synthesis cosmetic products." 56.0 % agreed, 28.2 % strongly agreed 12.5 % uncertain 2.5 % disagreed and 0.8 % strongly disagreed respectively.

Table 11 Number and percentage of people as classified by attitude toward herbal cosmetic products.

N = 400 cases

Attitude toward herbal cosmetic products	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Herbal cosmetic products are developed to easily using form.	158 (39.5)	229 (57.2)	12 (3.0)	1 (0.3)	0 (0.0)
2. Always using herbal cosmetic products are dangerous.*	6 (1.5)	15 (3.8)	180 (45.0)	161 (40.2)	38 (9.5)
3. Using of herbal cosmetic products is outmoded.*	7 (1.7)	7 (1.7)	20 (5.0)	231 (57.8)	135 (33.8)
4. Synthesis cosmetic products are safe than herbal cosmetic products.*	9 (2.3)	31 (7.8)	101 (25.2)	174 (43.5)	85 (21.2)
5. The properties of synthesis cosmetic products are better than herbal cosmetic products because they are more expensive.*	3 (0.8)	24 (6.0)	63 (15.8)	196 (49.0)	114 (28.4)
6. Herbal cosmetic products increase income to agriculturist.	185 (46.3)	187 (46.8)	23 (5.7)	2 (0.5)	3 (0.8)
7. Using of herbal cosmetic products is one expedient of solution of economic crisis.	158 (39.5)	197 (49.2)	33 (8.3)	8 (2.0)	4 (1.0)
8. The properties of most of herbal cosmetic products are overrated.*	4 (1.0)	42 (10.5)	158 (39.5)	164 (41.0)	32 (8.0)
9. Using of herbal cosmetic products should be promoted.	187 (46.8)	182 (45.4)	23 (5.8)	5 (1.2)	3 (0.8)
10. Herbal cosmetic products are inappropriate for teenagers.*	5 (1.2)	13 (3.3)	50 (12.5)	219 (54.8)	113 (28.2)
11. Using of herbal cosmetic products is fashion.*	3 (0.8)	55 (13.7)	90 (22.5)	187 (46.8)	65 (16.2)
12. Herbal cosmetic products are replaced with synthesis cosmetic products.	113 (28.2)	224 (56.0)	50 (12.5)	10 (2.5)	3 (0.8)

notes : * negative items

By categorizing the level of attitude toward herbal cosmetic products, people's attitude toward herbal cosmetic products were at a high level 90.0 %, at a moderate level 7.8 % and at a low level 2.2 % respectively. The average score was 48.01. (Table12)

Table 12 Number and percentage of people as classified by the levels of attitude toward herbal cosmetic products.

N = 400 Cases

Levels of attitude toward herbal cosmetic products		Number	Percentage
Low level	(1 – 35 scores)	9	2.2
Moderate level	(36 – 41 scores)	31	7.8
High level	(42 – 60 scores)	360	90.0

$\bar{X}$ = 48.01 S.D. = 5.22 Max = 60 Min = 31

6. Valuation of Health

In the study, the results of the study showed valuation of health of 400 cases as follows: (Table 13)

1. "Drink a lot of liquors or beer." 66.0 % indicated "never", 31.2 indicated "often" and 2.8 % indicated "always" respectively.
2. "Avoid eating high sugar and fat." 65.8 % indicated "often", 24.4 % indicated "always" and 9.8 % indicated "never" respectively.
3. "Avoid sunlight during the day." 51.5 % indicated "often", 43.5 % indicated "always" and 5.0 % indicated "never" respectively.
4. "Usually scratch, squeeze or touch a face." 60.5 % indicated "often", 25.3 % indicated "never" and 14.2 % indicated "always" respectively.
5. "Dried your face with clean towel after washing." 73.5 % indicated "always", 22.0 % indicated "often" and 4.5 % indicated "never" respectively.
6. "Squeeze or scratch acne for treat by yourself." 50.5 % indicated "often", 37.7 % indicated "never" and 11.8 % indicated "always" respectively.
7. "Strongly scrub the head during shampooing." 47.0 % indicated "often", 39.2 % indicated "never" and 13.8 % indicated "always" respectively.
8. "Sleep late or lesser than 6 – 8 hours a night." 59.5 % indicated "often", 26.5 % indicated "never" and 14.0 % indicated "always" respectively.
9. "Clean the bed every week." 52.0 % indicated "always", 42.2 indicated "often" and 5.8 % indicated "never" respectively.
10. "Wear unwashed clothes." 77.7 % indicated "never", 19.5 % indicated "often" and 1.8 % indicated "always" respectively.

Table 13 Number and percentage of people as classified by valuation of health.

N = 400 cases

Valuation of health	Always	Often	Never
1. Drink a lot of liquors or beer.	11	25	264
	(2.8)	(31.2)	(66.0)
2. Avoid eating high sugar and fat.	98	263	39
	(24.4)	(65.8)	(9.8)
3. Avoid sunlight during the day.	174	206	20
	(43.5)	(51.5)	(5.0)

Table 13 Number and percentage of people as classified by valuation of health. (Cont.)

N = 400 cases

Valuation of health	Always	Often	Never
4. Usually scratch, squeeze or touch a face.*	57 (14.2)	242 (60.5)	101 (25.3)
5. Dried your face with clean towel after washing.	294 (73.5)	88 (22.0)	18 (4.5)
6. Squeeze or scratch acne for treat by yourself.*	47 (11.8)	202 (50.5)	151 (37.7)
7. Strongly scrub the head during shampooing.*	55 (13.8)	188 (47.0)	157 (39.2)
8. Sleep late or lesser than 6 – 8 hours a night.*	106 (26.5)	238 (59.5)	56 (14.0)
9. Clean the bed every week.	208 (52.0)	169 (42.2)	23 (5.8)
10. Wear unwashed clothes.*	7 (1.8)	78 (19.5)	315 (77.7)

notes : * negative items

By categorizing the level of valuation of health, people realized the valuation of health at a high level 88.3 %, at a moderate level 9.5 % and at a low level 2.2 % respectively. The average score was 23.59. (Table14)

Table 14 Number and percentage of people as classified by the levels of valuation of health.

N = 400 cases

Levels of valuation of health		Number	Percentage
Low level	(1 – 17 scores)	9	2.2
Moderate level	(18 – 20 scores)	38	9.5
High level	(21 – 30 scores)	353	88.3

$\bar{X}$ = 23.59 S.D. = 2.67 Max = 30 Min = 14

7. Awareness of Environment

In the study, the results of the study showed awareness of environment of 400 cases as follows: (Table 15)

1. "Using herbal cosmetic products can reduce the residual chemical in environment." Agree 54.2 %, strongly agree 32.8 %, uncertain 11.8 % and disagree 1.2 % respectively.

2. "Using green products for environment conservation can decreases environment problems." Agree 56.5 %, strongly agree 25.5 %, uncertain 16.2 %, disagree 1.0 % and strongly disagree 0.8 % respectively.

3. "Using herbal cosmetic products can promote growing and breeding herbal plants more widely." strongly agree 48.2 %, agree 46.8 %, uncertain 4.7 % and disagree 0.3 % respectively.

4. "Herbal conservation increases the biodiversity that is good for ecology." Agree 46.5 %, strongly agree 41.2 %, uncertain 10.5 % and disagree 1.8 % respectively.

5. "The consuming organically grown vegetables is the conservation of soil and water." Strongly agree 46.8 %, agree 40.7 %, uncertain 10.7 %, disagree 1.5 % and strongly disagree 0.3 % respectively.

6. "The use of herbal cosmetic products are the forest destruction motivation." Disagree 42.5 %, uncertain 25.8 %, strongly disagree 13.7 %, strongly agree 12.5 % and agree 5.5 % respectively.

7. "The forest destruction has an effect on the fertility of soil and water." Strongly agree 52.0 %, agree 32.5 %, uncertain 7.5 %, disagree 3.5 % and strongly disagree 4.5 % respectively.

8. "The forest destruction has no effect on herbal plants." Strongly agree 25.0 %, disagree 25.0 %, agree 23.7 %, strongly disagree 14.0 % and uncertain 12.3 % respectively.

9. "The chemicals using in life do not cause the environment problems." Disagree 42.8 %, strongly disagree 29.2 %, uncertain 10.8 %, agree 9.2 % and strongly agree 8.0 % respectively.

10. "Choose cosmetics which test with animal." Uncertain 45.0 %, disagree 27.7 %, agree 13.3 %, strongly disagree 12.2 % and strongly agree 1.8 % respectively.

11. "The solution of environment problems is only the government function." Disagree 44.5 %, strongly disagree 43.0 %, uncertain 6.5 %, agree 4.2 % and strongly agree 1.8 % respectively.

12. "Everybody should realize the environment problems." Strongly agree 67.0 %, agree 28.5 %, uncertain 3.2 %, strongly disagree 0.8 % and disagree 0.5 % respectively.

Table 15 Number and percentage of people as classified by awareness of environment.

N = 400 cases

Awareness of environment	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Using herbal cosmetic products can reduce the residual chemical in environment.	131 (32.8)	217 (54.2)	47 (11.8)	5 (1.2)	0 (0.0)
2. Using green products for environment conservation can decreases environment problems.	102 (25.5)	226 (56.5)	65 (16.2)	4 (1.0)	3 (0.8)
3. Using herbal cosmetic products can promote growing and breeding herbal plants more widely.	193 (48.2)	187 (46.8)	19 (4.7)	1 (0.3)	0 (0.0)
4. Herbal conservation increases the biodiversity that is good for ecology.	165 (41.2)	186 (46.5)	42 (10.5)	7 (1.8)	0 (0.0)

Table 15 Number and percentage of people as classified by awareness of environment. (Cont.)

N = 400 cases

Awareness of environment	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
5. The consuming organically grown vegetables is the conservation of soil and water.	187 (46.8)	163 (40.7)	43 (10.7)	6 (1.5)	1 (0.3)
6. The use of herbal cosmetic products are the forest destruction motivation.*	22 (5.5)	50 (12.5)	103 (25.8)	170 (42.5)	55 (13.7)
7. The forest destruction has an effect on the fertility of soil and water.	208 (52.0)	130 (32.5)	30 (7.5)	14 (3.5)	18 (4.5)
8. The forest destruction has no effect on herbal plants.*	100 (25.0)	95 (23.7)	49 (12.3)	100 (25.0)	56 (14.0)
9. The chemicals using in life do not cause the environment problems.*	32 (8.0)	37 (9.2)	43 (10.8)	171 (42.8)	117 (29.2)
10. Choose cosmetics which test with animal.*	7 (1.8)	53 (13.3)	180 (45.0)	111 (27.7)	49 (12.2)
11. The solution of environment problems is only the government function.*	7 (1.8)	17 (4.2)	26 (6.5)	178 (44.5)	172 (43.0)
12. Everybody should realize the environment problems.	268 (67.0)	114 (28.5)	13 (3.2)	2 (0.5)	3 (0.8)

notes : * negative items

By categorizing the level of awareness of environment, people were aware of environment at a high level 87.2 %, at a moderate level 12.0 % and at a low level 0.8 % respectively. The average score was 47.71. (Table 16)

Table 16 Number and percentage of people as classified by the levels of awareness of environment.

N = 400 cases

Levels of awareness of environment		Number	percentage
Low level	(1 – 35 scores)	3	0.8
Moderate level	(36 – 41 scores)	48	12.0
High level	(42 – 60 scores)	349	87.2

$\bar{X}$ = 47.71 S.D. = 5.33 Max = 60 Min = 33

8. Modernization

In the study, the results of the study showed modernization of 400 cases as follows: (Table17)

1. "You like to follow, learn, search or attend on new issue or newness." agree 61.2 %, strongly agree 34.2 %, uncertain 3.8 % and disagree 0.8 % respectively.
2. "You are always interested in news or events." Agree 61.2 %, strongly agree 34.7 %, uncertain 3.8 % and disagree 0.3 % respectively.

3. "You are usually anti social change." Uncertain 39.7 %, disagree 35.5 %, agree 17.0 %, strongly disagree 4.3 % and strongly agree 3.5 % respectively.

4. "You want to test the new products advertised on media." Agree 34.7 %, uncertain 33.5 %, disagree 24.2 %, strongly agree 3.8 and strongly disagree 3.8 % respectively.

5. "You like to do the challenge task that tests your ability." Agree 45.8 %, uncertain 26.5 %, disagree 14.5 %, strongly agree 11.7 % and strongly disagree 1.5 % respectively.

6. "You always try to use new products in order to find the better ones." Agree 43.5 %, uncertain 23.5%, disagree 21.2 %, strongly agree 10.0 % and strongly disagree 1.8 % respectively.

7. "You always lead the change or newness to anybody." Agree 40.2 %, uncertain 34.5%, disagree 14.8 %, strongly agree 9.5 % and strongly disagree 1.0 % respectively.

8. "You always look for new knowledge." Agree 66.7 %, strongly agree 26.0 %, uncertain 6.8 % and disagree 0.5 % respectively.

9. "You always attempt to adapt yourselves to various environments." Agree 65.8 %, strongly agree 24.2 %, uncertain 7.2 %, disagree 2.5 % and strongly disagree 0.3 % respectively.

10. "You always accept the innovation or newness immediately after study or search about it and found that it is useful." Agree 58.0 %, strongly agree 27.2 %, uncertain 13.0 % and disagree 1.8 % respectively.

Table 17 Number and percentage of people as classified by modernization.

N = 400 cases

Modernization	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. You like to follow, learn, search or attend on new issue or newness.	137 (34.2)	245 (61.2)	15 (3.8)	3 (0.8)	0 (0.0)
2. You are always interested in news or events.	139 (34.7)	245 (61.2)	15 (3.8)	1 (0.3)	0 (0.0)
3. You are usually anti social change.*	14 (3.5)	68 (17.0)	159 (39.7)	142 (35.5)	17 (4.3)
4. You want to test the new products advertised on media.	15 (3.8)	139 (34.7)	134 (33.5)	97 (24.2)	15 (3.8)
5. You like to do the challenge task that test your ability.	47 (11.7)	183 (45.8)	106 (26.5)	58 (14.5)	6 (1.5)
6. You always try to use new products in order to find the better ones.	40 (10.0)	174 (43.5)	94 (23.5)	85 (21.2)	7 (1.8)
7. You always lead to change or newness to anybody.	38 (9.5)	161 (40.2)	138 (34.5)	59 (14.8)	4 (1.0)
8. You always look for new knowledge.	104 (26.0)	267 (66.7)	27 (6.8)	2 (0.5)	0 (0.0)
9. You always attempt to adapt yourselves to various environments.	97 (24.2)	263 (65.8)	29 (7.2)	10 (2.5)	1 (0.3)

Table 17 Number and percentage of people as classified by modernization. (Cont.)

N = 400 cases

Modernization	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
10. You always accept the innovation or newness immediately after study or search about it and found that it is useful.	109 (27.2)	232 (58.0)	52 (13.0)	7 (1.8)	0 (0.0)

notes : * negative items

By categorizing the level of modernization, people were modern at a high level 75.0 %, at a moderate level 23.2 % and at a low level 1.8 % respectively. The average score was 37.42. (Table 18)

Table 18 Number and percentage of people as classified by the levels ofmodernization.

N = 400 Cases

Levels of modernization		Number	percentage
Low level	(1 – 29 scores)	7	1.8
Moderate level	(30 – 34 scores)	93	23.2
High level	(35 – 50 scores)	300	75.0

$\bar{X}$ = 37.42 S.D. = 4.04 Max = 48 Min = 24

4.1.3 Adoption of herbal cosmetic products

Table 19 show the result from study on the adoption of herbal cosmetic products of 400 cases as follow:

Awareness Stage

1. "You are aware of an effect of herbs in herbal cosmetic products." 71.2 % yes, 25.8 % uncertain and 3.0 % no respectively.
2. "The properties of herbal cosmetic products are good properties." 73.7 % agree, 25.8 % uncertain and 2.0 % disagree respectively.
3. "You accessed to herbal cosmetic product information." 75.0 % yes, 15.3 % uncertain and 9.7 % no respectively.
4. "Other people suggested you to use herbal cosmetic products." 73.0 % yes, 15.3 % uncertain and 11.7 % no respectively.
5. "You are aware that herbal cosmetic products are safety products." 78.7 % yes, 20.3 % uncertain and 1.0 % no respectively.

Interest Stage

6. "You studied on properties of herbal cosmetic products." 65.8 % yes, 27.0 % uncertain and 7.2 % no respectively.

7. "You asked for detail of herbal cosmetic products." 61.0 % yes, 24.7 % uncertain and 14.3 % no respectively.

8. "You are interested in herbal cosmetic products by information which you access." 80.0 % yes, 16.0 % uncertain and 4.0 % no respectively.

9. "You talked to change experience or data about herbal cosmetic products." 69.5 % yes, 20.5 % uncertain and 10.0 % no respectively.

10. "You followed herbal cosmetic products information." 59.8 % yes, 26.7 % uncertain and 13.5 % no respectively.

11. "You observed other people who used herbal cosmetic products." 64.5 % yes, 21.7 % uncertain and 13.8 % no respectively.

Trial Stage

12. "After receiving herbal cosmetic product information, you decide to try them." 81.3 % yes, 14.2 % uncertain and 4.5 % no respectively.

13. "At the beginning, you use only a little quantities of herbal cosmetic products." 82.0 % yes, 13.0 % uncertain and 5.0 % no respectively.

14. "You tested for allergy before you decide to use herbal cosmetic products." 60.0 % yes, 20.5 % no and 19.5 % uncertain respectively.

15. "You desired to try all of herbal cosmetic products." 39.2 % yes, 35.0 % uncertain and 25.8 % no respectively.

Implementation Stage

16. "You are pleased to use herbal cosmetic products." 86.0 % yes, 12.0 % uncertain and 2.0 % no respectively.

17. "You always used herbal cosmetic products." 53.8 % yes, 29.7 % uncertain and 16.5 % no respectively.

18. "You used herbal cosmetic products to replace synthesis cosmetic products." 58.5 % yes, 27.0 % uncertain and 14.5 % no respectively.

19. "You decided to use herbal cosmetic products because of their good efficiency." 75.7 % yes, 20.3 % uncertain and 4.0 % no respectively.

20. "You buy herbal cosmetic products for use in your home." 76.7 % yes, 16.5 % uncertain and 6.8 % no respectively.

Confirmation Stage

21. "You desired to use all of herbal cosmetic products." 44.0 % uncertain, 31.0 % yes and 25.0 % no respectively.

22. "You continually used herbal cosmetic products." 76.2 % yes, 21.3 % uncertain and 2.5 % no respectively.

23. "You feel confident in using of herbal cosmetic products." 77.3 % yes, 19.7 % uncertain and 3.0 % no respectively.

24. "You advised other people to use herbal cosmetic products." 79.0 % yes, 17.2 % uncertain and 3.8 % no respectively.

25. "If Chaophaya Abhaibhubejhr Hospital has new herbal cosmetic products, you are pleased to use them." 75.5 % yes, 23.5 % uncertain and 1.0 % no respectively.

Table 19 Number and percentage of people as classified by adoption of herbal cosmetic products.

N = 400 Cases

Adoption of herbal cosmetic products	agree / yes	uncertain	Disagree / no
Awareness Stage			
1. You are aware of an effect of herbs in herbal cosmetic products.	285 (71.2)	103 (25.8)	12 (3.0)
2. The properties of herbal cosmetic products are good properties.	295 (73.7)	103 (25.8)	2 (0.5)
3. You accessed to herbal cosmetic products information.	300 (75.0)	61 (15.3)	39 (9.7)
4. Other people suggested you to use herbal cosmetic products.	292 (73.0)	61 (15.3)	47 (11.7)
5. You are aware that herbal cosmetic products are safety products.	315 (78.7)	81 (20.3)	4 (1.0)
Interest Stage			
6. You studied on properties of herbal cosmetic products.	263 (65.8)	108 (27.0)	29 (7.2)
7. You asked for detail of herbal cosmetic products.	244 (61.0)	99 (24.7)	57 (14.3)
8. You are interested in herbal cosmetic products by information which you access.	320 (80.0)	64 (16.0)	16 (4.0)
9. You talked to change experience or data about herbal cosmetic products.	278 (69.5)	82 (20.5)	40 (10.0)
10. You followed herbal cosmetic product information.	239 (59.8)	107 (26.7)	54 (13.5)
11. You observed other people who used herbal cosmetic products.	258 (64.5)	87 (21.7)	55 (13.8)
Trial Stage			
12. After receiving herbal cosmetic products information, you decide to try them.	325 (81.3)	57 (14.2)	18 (4.5)
13. At the beginning, you use only a little quantities of herbal cosmetic products.	328 (82.0)	52 (13.0)	20 (5.0)
14. You tested for allergy before you decide to use herbal cosmetic products.	240 (60.0)	78 (19.5)	82 (20.5)
15. You desired to try all of herbal cosmetic products.	157 (39.2)	140 (35.0)	103 (25.8)
Implementation Stage			
16. You are pleased to use herbal cosmetic products.	344 (86.0)	48 (12.0)	8 (2.0)
17. You always used herbal cosmetic products.	215 (53.8)	119 (29.7)	66 (16.5)

Table 19 Number and percentage of people as classified by adoption of herbal cosmetic products. (Cont.)

N = 400 Cases

Adoption of herbal cosmetic products	agree / yes	uncertain	Disagree / no
18. You used herbal cosmetic products to replace synthesis cosmetics products.	234 (58.5)	108 (27.0)	58 (14.5)
19. You decided to use the herbal cosmetic products because of their good efficiency.	303 (75.7)	81 (20.3)	16 (4.0)
20. You buy the herbal cosmetic products for use in your home.	307 (76.7)	66 (16.5)	27 (6.8)
Confirmation Stage			
21. You desired to use all of herbal cosmetic products.	124 (31.0)	176 (44.0)	100 (25.0)
22. You continually used herbal cosmetic products.	305 (76.2)	85 (21.3)	10 (2.5)
23. You feel confident in using of herbal cosmetic products.	309 (77.3)	79 (19.7)	12 (3.0)
24. You advised other people to use herbal cosmetic products.	316 (79.0)	69 (17.2)	15 (3.8)
25. If Chaophaya Abhaibhubejhr Hospital has new herbal cosmetic products, you are pleased to use them.	302 (75.5)	94 (23.5)	4 (1.0)

By categorizing the level of adoption of herbal cosmetic products on stage : (Table 20)

Awareness Stage, people were adopt of the herbal cosmetic products at a high level 91.5 %, at a moderate level 6.2 % and at a low level 2.3 % respectively.

Interest Stage, people were adopt of the herbal cosmetic products at a high level 84.8 %, at a moderate level 8.7 % and at a low level 6.5 % respectively.

Trial Stage, people were adopt of the herbal cosmetic products at a high level 81.8 %, at a moderate level 15.0 % and at a low level 3.3 % respectively.

Implementation Stage, people were adopt of the herbal cosmetic products at a high level 85.7 %, at a moderate level 10.3 % and at a low level 4.0 % respectively.

Confirmation Stage, people were adopt of the herbal cosmetic products at a high level 89.0 %, at a moderate level 8.7 % and at a low level 2.3 % respectively.

Table 20 Number and percentage of people as classified by the levels of adoption of herbal cosmetic products by stage.

N = 400 Cases

Levels of adoption of herbal cosmetic products on stage		Number	Percentage
Awareness Stage			
Low level	(1 – 8 scores)	9	2.3
Moderate level	(9 – 10 scores)	25	6.2
High level	(11 – 15 scores)	366	91.5
$\bar{X}$ = 13.46 S.D. = 1.83 Max = 15 Min = 7			
Interest Stage			
Low level	(1 – 10 scores)	26	6.5
Moderate level	(11 – 12 scores)	35	8.7
High level	(13 – 18 scores)	339	84.8
$\bar{X}$ = 15.38 S.D. = 2.72 Max = 18 Min = 6			
Trial Stage			
Low level	(1 – 6 scores)	13	3.3
Moderate level	(7 – 8 scores)	60	15.0
High level	(9 – 12 scores)	327	81.7
$\bar{X}$ = 10.07 S.D. = 1.69 Max = 12 Min = 4			
Implementation Stage			
Low level	(1 – 8 scores)	16	4.0
Moderate level	(9 – 10 scores)	41	10.3
High level	(11 – 15 scores)	343	85.7
$\bar{X}$ = 13.07 S.D. = 2.16 Max = 15 Min = 5			
Confirmation Stage			
Low level	(1 – 8 scores)	9	2.3
Moderate level	(9 – 10 scores)	35	8.7
High level	(11 – 15 scores)	356	89.0
$\bar{X}$ = 13.04 S.D. = 1.85 Max = 15 Min = 5			

In summing all scores of three aspects of adoption in Table 21 , the adoption level of the majority of people were at a high level 91.8 %, at a moderate level 6.0 % and at a low level 2.2 % respectively.

Table 21 Number and percentage of people as classified by the levels of adoption of herbal cosmetic products.

N = 400 Cases

Levels of adoption of herbal cosmetic products		Number	Percentage
Low level	(1 – 44 scores)	9	2.2
Moderate level	(45 – 52 scores)	24	6.0
High level	(53 – 75 scores)	367	91.8
$\bar{X}$ = 65.01 S.D. = 7.99 Max = 75 Min = 31			

4.1.4 The analysis of correlation of the socio – demographic variable and motive variable with the adoption of herbal cosmetic products by one-way analysis of variance and t-test.

1. Socio – demographic Variables

The analyses of the correlation of socio – demographic variables with the adoption of herbal cosmetic products as fallow: (Table 22)

Gender : Male ($\bar{X}$ = 65.03) practiced adoption of herbal cosmetic products more than Female ($\bar{X}$ = 65.00) did. Based on statistical test, gender made a insignificant difference to adoption of herbal cosmetic products.

Age : The people with aged 44 years old and above ($\bar{X}$ = 66.18) practiced adoption of herbal cosmetic products more than those who between aged 24 – 43 years old ($\bar{X}$ = 64.82) and aged 23 years old and below ($\bar{X}$ = 64.41) did respectively. Based on statistical test, age made a insignificant difference to adoption of herbal cosmetic products.

Occupation : The people who were agriculturist ($\bar{X}$ = 69.00) practiced adoption of herbal cosmetic products more than Housewives ($\bar{X}$ = 68.37), Government official ($\bar{X}$ = 65.68), State enterprise official/company official/Employees ($\bar{X}$ = 64.74), Students ($\bar{X}$ = 63.67) and merchant/self-employed ($\bar{X}$ = 62.97) did respectively. Based on statistical test, occupation made a significant difference to adoption of herbal cosmetic products. (at $p < 0.05$)

Education : The people with high school diploma ($\bar{X}$ = 65.88) practiced adoption of herbal cosmetic products more than held primary school diploma ($\bar{X}$ = 65.15), undergraduate level ($\bar{X}$ = 65.09), graduate degree ($\bar{X}$ = 64.80) and post graduate degree ($\bar{X}$ = 64.09) did respectively. Based on statistical test, education made a insignificant difference to adoption of herbal cosmetic products.

Income : The people earning 15,001 – 20,000 Bath ($\bar{X}$ = 66.28) practiced adoption of herbal cosmetic products more than who earned 5,001 – 10,000 Bath ($\bar{X}$ = 65.34), earned 10,001 – 15,000 Bath ($\bar{X}$ = 64.78), earned 1,000 – 5,000 Bath ($\bar{X}$ = 64.72), and earned 20,001 – 100,000 Bath ($\bar{X}$ = 63.87) did respectively. Based on statistical test, income made a insignificant difference to adoption of herbal cosmetic products.

2. Motive Variables

The analyses of the correlation of motive variables with the adoption of herbal cosmetic products as follow: (Table23)

Convenience to buy herbal cosmetic products : The people having convenience to buy herbal cosmetic products ($\bar{X}$ = 65.69) practiced adoption of herbal cosmetic products more than those who had inconvenience to buy herbal cosmetic products ($\bar{X}$ = 63.49). Based on statistical test, there was a significant difference between convenience to buy herbal cosmetic products with adoption of herbal cosmetic products. (at $p < 0.05$)

Experience in use of herbal products : The people having experience in use of herbal products at high level ($\bar{X}$ = 71.53) practiced adoption of herbal cosmetic products more than those who had experience at moderate level ($\bar{X}$ = 68.50) and low level ($\bar{X}$ = 64.20) did respectively. Based on statistical test, there was a significant difference between experience in use of herbal products with adoption of herbal cosmetic products. (at $p < 0.001$)

Experience of problems from the use of cosmetics : The people having experience of problems from the use of cosmetics at moderate level ($\bar{X}$ = 65.82) practiced adoption of herbal cosmetic products more than those who had experience at low level ($\bar{X}$ = 65.09) and had not experience ($\bar{X}$ = 64.75) did respectively. Based on statistical test, there was a insignificant difference between experience of problems from the use of cosmetics with adoption of herbal cosmetic products.

Access to herbal cosmetic product information : The people having access to herbal cosmetic product information at low level ($\bar{X}$ = 65.57) practiced adoption of herbal cosmetic products more than those who had not access ($\bar{X}$ = 61.18) did respectively. Based on statistical test, there was a significant difference between with access to herbal cosmetic product information adoption of herbal cosmetic products. (at $p < 0.01$)

Knowledge of herbal cosmetic products : The people having knowledge of herbal cosmetic products at high level ($\bar{X}$ = 66.33) practiced adoption of herbal cosmetic products more than those who had knowledge at moderate level ($\bar{X}$ = 64.19) and low level ($\bar{X}$ = 61.96) did respectively. Based on statistical test, there was a significant difference between knowledge of herbal cosmetic products with adoption of herbal cosmetic products. (at $p < 0.001$)

Attitude toward herbal cosmetic products : The people having attitude toward herbal cosmetic products at high level ($\bar{X}$ = 65.58) practiced adoption of herbal cosmetic products more than those who had attitude at moderate level ($\bar{X}$ =

60.19) and low level ($\bar{X}$ = 58.89) did respectively. Based on statistical test, there was a significant difference between attitude toward herbal cosmetic products with adoption of herbal cosmetic products. (at $p < 0.001$)

Valuation of health : The people having valuation of health at high level ($\bar{X}$ = 65.19) practiced adoption of herbal cosmetic products more than those who had value at low level ($\bar{X}$ = 64.00) and moderate level ($\bar{X}$ = 63.58) did respectively. Based on statistical test, there was a insignificant difference between valuation of health with adoption of herbal cosmetic products.

Awareness of environment : The people having awareness of environment at high level ($\bar{X}$ = 65.28) practiced adoption of herbal cosmetic products more than those who had awareness at moderate level ($\bar{X}$ = 63.85) and low level ($\bar{X}$ = 52.67) did respectively. Based on statistical test, there was a significant difference between awareness of environment with adoption of herbal cosmetic products. (at $p < 0.05$)

Modernization : The people having modernization at high level ($\bar{X}$ = 65.91) practiced adoption of herbal cosmetic products more than those who had modernization at moderate level ($\bar{X}$ = 62.95) and low level ($\bar{X}$ = 54.00) did respectively. Based on statistical test, there was a significant difference modernization with adoption of herbal cosmetic products. (at $p < 0.001$)

Table 22 The analyses of the correlation of socio – demographic variables with the adoption of herbal cosmetic products by one-way analysis of variance and t-test.

N = 400 Cases

Variables + Category	$\bar{X}$	S.D.	N	Sig. of F
Gender				
Male	65.03	7.58	102	0.892
Female	65.00	8.14	298	
Age				
23 years old and below	64.41	7.32	73	0.333
24 – 43 years old	64.82	8.43	250	
44 years old and above	66.18	7.05	77	
Occupation				
Government official	65.68	7.90	137	0.047***
State enterprise official / company official / Employees	64.74	8.41	125	
Merchant/self – employed	62.97	8.88	36	
Students	63.67	7.37	70	
Housewives	68.37	5.63	30	
Agriculturist	69.00	8.49	2	

Table 22 The analyses of the correlation of socio-demographic variables with the adoption of herbal cosmetic products by one-way analysis of variance and t-test. (Cont.)

N = 400 Cases

Variables + Category	$\bar{X}$	S.D.	N	Sig. of F
Education				
Primary school diploma	65.15	7.93	20	0.809
High school diploma	65.88	6.39	76	
Undergraduate level	65.09	7.89	86	
Graduate degree	64.80	8.33	175	
Post graduate degree	64.09	9.46	43	
Income				
1,000 – 5,000 Bath	64.72	7.94	100	0.569
5,001 – 10,000 Bath	65.34	7.61	108	
10,001 – 15,000 Bath	64.78	7.67	80	
15,001 – 20,000 Bath	66.28	7.38	58	
20,001 – 100,000 Bath	63.87	9.81	54	

*P < 0.001 **P < 0.01 ***P < 0.05

Table 23 The analyses of the correlation of motive variables with the adoption of herbal cosmetic products by one-way analysis of variance and t-test.

N = 400 Cases

Variables + Category	$\bar{X}$	S.D.	N	Sig. Of F
Convenience to buy herbal cosmetic products				
Convenience	65.69	7.96	276	0.011***
Inconvenience	63.49	7.87	124	
Experience in use of herbal products				
At low level	64.20	8.16	337	0.000*
At moderate level	68.50	5.63	46	
At high level	71.53	3.34	17	
Experience of problems from the use of cosmetics				
Inexperience	64.75	8.52	171	0.761
At low level	65.09	7.34	195	
At moderate level	65.82	8.94	34	
Access to herbal cosmetic product information				
Non-access	61.18	10.05	51	0.005**
At low level	65.57	7.50	349	
Knowledge of herbal cosmetic products				
At low level				
At moderate level	61.96	8.43	70	0.000*
At high level	64.19	7.59	104	
	66.33	7.75	226	

Table 23 The analyses of the correlation of motive variables with the adoption of herbal cosmetic products by one-way analysis of variance and t-test. (Cont.)

N = 400 Cases

Variables + Category	$\bar{X}$	S.D.	N	Sig. Of F
Attitude toward herbal cosmetic products				
At low level				
At moderate level	58.89	5.42	9	0.000*
At high level	60.19	11.69	31	
Valuation of health	65.58	7.46	360	
At low level				
At moderate level	64.00	7.84	9	0.464
At high level	63.58	9.18	38	
Awareness of environment	65.19	7.86	353	
At low level				
At moderate level	52.67	2.52	3	0.014***
At high level	63.85	8.34	48	
Modernization	65.28	7.89	349	
At low level				
At moderate level	54.00	7.66	7	0.000*
At high level	62.95	8.03	93	
	65.91	7.69	300	

*P < 0.001 **P < 0.01 ***P < 0.05

4.1.5 The analysis of correlation of the socio – demographic variable and motive variable with the adoption of herbal cosmetic products by analysis of variance and multiple classification analysis. (MCA)

Model

Dependent Variables

The adoption of herbal cosmetic products

Independent Variables

Occupation
Convenience to buy herbal cosmetic products
Experience in use of herbal products
Access to herbal cosmetic product information
Knowledge of herbal cosmetic products
Attitude toward herbal cosmetic products
Awareness of environment
Modernization

According to the analysis of variance was found that the main effect of independent variables consist of Occupation, Experience in use of herbal products, Access to herbal cosmetic product information, Knowledge of herbal cosmetic products, Attitude toward herbal cosmetic products, Awareness of environment and Modernization had a significantly related to adoption of herbal cosmetic products at $p < 0.001$. (Table 24)

Experience in use of herbal products, Access to herbal cosmetic product information, Knowledge of herbal cosmetic products and Attitude toward herbal cosmetic products had a significantly related to adoption of herbal cosmetic products at $p < 0.001$, Modernization had a significantly related to adoption of herbal cosmetic products at $p < 0.01$, Occupation had a significantly related to adoption of herbal cosmetic products at $p < 0.05$ and Awareness of environment had a insignificantly related to adoption of herbal cosmetic products.

Base on statistical test was found that the model had explained a significant related to adoption of herbal cosmetic products at $p < 0.001$.

Table 24 The analyses of the correlation of socio-demographic variables and motive variables with the adoption of herbal cosmetic products by analysis of variance.

Source of variation	Sum of Squares	df	Mean Square	F	Sig. Of F
Main effect	5179.088	17	304.652	5.734	0.000
Occupation	714.902	5	142.980	2.691	0.021***
Convenience to buy herbal cosmetic products	389.752	1	389.752	7.335	0.007**
Experience in use of herbal products	1168.341	2	584.171	10.994	0.000*
Access to herbal cosmetic product information	522.837	1	522.837	9.840	0.002**
Knowledge of herbal cosmetic products	909.549	2	454.774	8.559	0.000*
Attitude toward herbal cosmetic products	715.474	2	357.737	6.733	0.001*
Awareness of environment	108.034	2	54.017	1.017	0.363
Modernization	650.200	2	325.100	6.119	0.002**
Model	5179.088	17	304.652	5.734	0.000
Residual	20296.872	382	53.133		
Total	25475.960	399	63.850		

*P < 0.001 **P < 0.01 ***P < 0.05

According to the multiple classification analysis of the factors which had related to adoption of herbal cosmetic products was found that the grand mean was 65.01. The result of the multiple classification analysis as follows: (Table 25)

Occupation : Unadjusted for factors was found that Agriculturists (mean = 69.00) had adoption of herbal cosmetic products more than Housewives (mean = 68.37), Government official (mean = 65.68), State enterprise official / Company official / Employees (mean = 64.74), Students (mean = 63.67) and Merchant / Self – employed (mean = 62.97) did respectively. The occupation was able to predict the adoption of herbal cosmetic products of 17 % (Eta = 0.17).

Adjusted for factors was found that Housewives (mean = 68.71) had adoption of herbal cosmetic products more than Agriculturists (mean = 67.22), Government official (mean = 65.20), State enterprise official / Company official / Employees (mean = 64.97), Students (mean = 64.25) and Merchant / Self – employed (mean = 62.69) did respectively. The occupation was able to predict the adoption of herbal cosmetic products of 16 % (Beta = 0.16).

Convenience to buy herbal cosmetic products : Unadjusted for factors was found that the people having Convenience to buy herbal cosmetic products (mean = 65.69) had adoption of herbal cosmetic products more than those who had inconvenience to buy herbal cosmetic products (mean = 63.49). The Convenience to buy herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 13 % (Eta = 0.13).

Adjusted for factors was found that the people having Convenience to buy herbal cosmetic products (mean = 65.39) had adoption of herbal cosmetic products more than those who had inconvenience to buy herbal cosmetic products (mean = 64.17). The Convenience to buy herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 6 % (Beta = 0.06).

Experience in use of herbal products : Unadjusted for factors was found that the people having experience in use of herbal products at high level (mean = 71.53) had adoption of herbal cosmetic products more than those who had experience at moderate level (mean = 68.50) and low level (64.20) did respectively. The experience in use of herbal products was able to predict the adoption of herbal cosmetic products of 13 % (Eta = 0.13).

Adjusted for factors was found that the people having experience in use of herbal products at high level (mean = 69.99) had adoption of herbal cosmetic products more than those who had experience at moderate level (mean = 67.92) and low level (64.36) did respectively. The experience in use of herbal products was able to predict the adoption of herbal cosmetic products of 19 % (Beta = 0.19).

Access to herbal cosmetic product information : Unadjusted for factors was found that the people having access to herbal cosmetic product information at low level (mean = 65.57) had adoption of herbal cosmetic products more than those

who had not access (mean = 61.18) did respectively. The access to herbal cosmetic product information was able to predict the adoption of herbal cosmetic products of 18 % (Eta = 0.18).

Adjusted for factors was found that the people having access to herbal cosmetic product information at low level (mean = 65.43) had adoption of herbal cosmetic products more than those who had not access (mean = 62.15) did respectively. The access to herbal cosmetic product information was able to predict the adoption of herbal cosmetic products of 14 % (Beta = 0.14).

Knowledge of herbal cosmetic products : Unadjusted for factors was found that the people having knowledge of herbal cosmetic products at high level (mean = 66.33) had adoption of herbal cosmetic products more than those who had knowledge at moderate level (mean = 64.19) and low level (mean = 61.96) did respectively. The knowledge of herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 21 % (Eta = 0.21).

Adjusted for factors was found that the people having knowledge of herbal cosmetic products at high level (mean = 65.75) had adoption of herbal cosmetic products more than those who had knowledge at moderate level (mean = 64.28) and low level (mean = 63.71) did respectively. The knowledge of herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 11 % (Beta = 0.11).

Attitude toward herbal cosmetic products : Unadjusted for factors was found that the people having attitude toward herbal cosmetic products at high level (mean = 65.58) had adoption of herbal cosmetic products more than those who had attitude at moderate level (mean = 60.19) and low level (mean = 58.89) did respectively. The attitude toward herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 22 % (Eta = 0.22).

Adjusted for factors was found that the people having attitude toward herbal cosmetic products at high level (mean = 65.49) had adoption of herbal cosmetic products more than those who had attitude at moderate level (mean = 60.75) and low level (mean = 60.39) did respectively. The attitude toward herbal cosmetic products was able to predict the adoption of herbal cosmetic products of 18 % (Beta = 0.18).

Awareness of environment : Unadjusted for factors was found that the people having awareness of environment at high level (mean = 65.28) had adoption of herbal cosmetic products more than those who had awareness at moderate level (mean = 63.85) and low level (mean = 52.67) did respectively. The awareness of environment was able to predict the adoption of herbal cosmetic products of 15 % (Eta = 0.15).

Adjusted for factors was found that the people having awareness of environment at moderate level (mean = 66.76) had adoption of herbal cosmetic products more than those who had awareness at high level (mean = 64.80) and low

level (mean = 61.89) did respectively. The awareness of environment was able to predict the adoption of herbal cosmetic products of 9 % (Beta = 0.09).

Modernization : Unadjusted for factors was found that the people having modernization at high level (mean = 65.91) had adoption of herbal cosmetic products more than those who had modernization at moderate level (mean = 62.95) and low level (mean = 54.00) did respectively. The modernization was able to predict the adoption of herbal cosmetic products of 24 % (Eta = 0.24)

Adjusted for factors was found that the people having modernization at high level (mean = 65.64) had adoption of herbal cosmetic products more than those who had modernization at moderate level (mean = 63.56) and low level (mean = 57.47) did respectively. The modernization was able to predict the adoption of herbal cosmetic products of 17 % (Beta = 0.17)

From the Model Goodness of Fit analysis it was found that the independent variables are able to explained the adoption of herbal cosmetic products of 19.9 % (Multiple R Squared = 0.199). The multiple coefficient of correlation was 0.446 (Multiple R = 0.446).

Summary, it was found that the people who were housewives, had experience in use of herbal products at high level, access to herbal cosmetic product information at low level, knowledge of herbal cosmetic products at high level, attitude toward herbal cosmetic products at high level, awareness of environment at moderate level and modernization at high level had the highest adoption of herbal cosmetic products.

Table 25 The analyses of the correlation of socio-demographic variables and motive variables with the adoption of herbal cosmetic products by multiple classification analysis. (MCA)

(Grand Mean = 65.01)

Variables + Category	N	Unadjusted Deviation Eta	Adjusted for Factors Deviation Beta
Occupation			
Government official	137	0.67	0.19
State enterprise official , company official , Employees	125	-0.27	-0.04
merchant/self-employed	36	-2.04	-2.32
Students	70	-1.34	-0.76
Housewives	30	3.36	3.70
Agriculturist	2	3.99	2.21
		0.17	0.16

Table 25 The analyses of the correlation of socio-demographic variables and motive variables with the adoption of herbal cosmetic products by multiple classification analysis. (MCA) (Cont.)

(Grand Mean = 65.01)

Variables + Category	N	Unadjusted Deviation	Eta	Adjusted for Factors Deviation	Beta
Convenience to buy herbal cosmetic products					
Convenience	276	0.68		0.38	
Inconvenience	124	-1.52		-0.84	
			0.13		0.07
Experience in use of herbal products					
At low level	337	-0.81		-0.61	
At moderate level	46	3.49		2.74	
At high level	17	6.52		4.71	
			0.24		0.18
Access to herbal cosmetic product information					
Non – access					
At low level	51	-3.83		-2.64	
	349	0.56		0.39	
Knowledge of herbal cosmetic products			0.18		0.13
At low level					
At moderate level					
At high level	70	-3.05		-1.34	
	104	-0.82		-0.67	
Attitude toward herbal cosmetic products	226	1.32		0.72	
At low level			0.21		0.11
At moderate level					
At high level					
	9	-6.12		-4.59	
Awareness of environment	31	-4.82		-4.22	
At low level	360	0.57		0.48	
At moderate level			0.22		0.18
At high level					
	3	-12.34		-3.09	
Modernization	48	-1.16		1.60	
At low level	349	0.27		-0.19	
At moderate level			0.15		0.08
At high level					
	7	-11.01		-7.65	
	93	-2.06		-1.44	
	300	0.90		0.62	
			0.24		0.17
Multiple R Squared				0.203	
Multiple R				0.451	

4.1.6 Problems / Obstacle and Suggestions

1. Problems / obstacle of using herbal cosmetic products

From the questionnaires to the inquiry, some problems / obstacle become apparent:

1.1 Boraphet Shampoo: 3.0 % made dry hair, weak hair, dandruff, itching, 1.0 % no fragrance and 0.3 % found dregs in shampoo.

1.2 Ginger Shampoo: 4.5 % made dry hair, weak hair, dandruff, itching and 3.8 % acrid smell and no fragrance.

1.3 Butterfly Pea Hair Conditioner: 0.8 % acrid smell and no fragrance, 0.5 % did not make soft hair and more dark color cream is not attractive and 0.3 % more bubble.

1.4 Scalp Treatment Emblic Myrobalan and Myrobalan Wood: 1.8 % no fragrance, 0.8 % more sticky oil and 0.3 % more expensive.

1.5 Mangosteen peel soap: 0.5 % no fragrance, 0.5 % did not like color and 0.3 % found dust in soap.

1.6 Turmeric soap: 0.5 % no fragrance and 0.3 % made dry skin.

1.7 Turmeric Liquid Soap: 1.5 % no fragrance 0.5 % less bubble, more slippery, more watery and made itching.

1.8 Tamarind Herbal Cleansing Cream: 7.0 % felt pain, itching, dry facial skin, 4.5 % sticky cream, difficult use, 2.0 % difficult wash, 1.3 % found fungi in cream and tube and 0.8 % no fragrance.

2. Suggestions of using herbal cosmetic products

2.1 To improve style of the herbal cosmetic products such as better smell, use more attractive colors, the quality of the herbal cosmetic products for more easy use, for example, to reduce the viscosity of Tamarind Herbal Cleansing Cream.

2.2 To develop many kinds of herbal cosmetic products to fit the wishes of customers. For example, to develop many kinds of shampoo according to many kinds of hairs, shampoo with conditioner, Mangosteen peel liquid soap, and different kinds of cleansing cream according to various kinds of skin.

3. Other problems / obstacles

From the questionnaires to the inquiry, some problems / obstacle become apparent:

3.1 They are too few selling shops, and the few ones are not known, they do not know each others and the herbal shop of Chaophaya Abhaibhubejhr Hospital is difficult to reach because it is too far away.

3.2 The price of some herbal cosmetic products are expensive and the selling price outside the hospital is too exaggerated.

3.3 The style of the herbal cosmetic products are old fashioned, too few of size for choose, unconfident of properties because their effective is too variable.

3.4 The information is low. Therefore, the herbal cosmetic products are not well known. Publications / brochures are rare and not interesting. Articles in documents are not accurate, particularly the data concerning all kinds of the herbal cosmetic products, properties of the herbal cosmetic products, the possible side effects and list of places where it is possible to find the herbal cosmetic products outside the herbal shop of Chaophaya Abhaibhubejhr Hospital.

3.5 Preferential rights for the members to promote the herbal cosmetic products are too low and the price list of resale is not fixed so that the members reselling the herbal cosmetic products are fixing the price themselves. Therefore, they create confusion about the prices. Lack of official prices allows some members to sell the herbal cosmetic products at very higher prices than the price in the herbal shop of Chaophaya Abhaibhubejhr hospital. They are arguing that they have side expenses.

3.6 They are too few sale officers and consequently services are inadequate. Especially the settlement service is slow and advisers for customers are rare.

4. Suggestions

4.1 To improve sale

- Chaophaya Abhaibhubejhr Hospital should be an increase the herbal shop.
- Start selling places in the working units of the Public Health Ministry such as the public health office, hospital.
- Create a representative in each province.
- To start export abroad.

4.2 Prices

- To reduce the prices of the herbal cosmetic products.
- To display clearly the prices
- To control members reselling the herbal cosmetic products with big profit.

4.3 To improve products

- To diversify the size of the container and specially create trial size.
- Improve labels to be nice and more modern.
- To print contents and directions to use on the labels.
- To warrant the standard quality of Chaophaya Abhaibhubejhr Hospital.
- To investigate other herbs in order to improve the herbal cosmetic products.

4.4 Information

- To increase a lot of the herbal cosmetic products information by the media.
- Print Publications /brochures in English.

4.5 Preferential rights for the members

- To improve the advantages for the members.

4.6 Services

- To improve the sale officer of the herbal shop of Chaophaya Abhaibhubejhr Hospital for the easiness of customers..

5. Requirement in other herbal cosmetic products

5.1 The skin products, like creams, lotions, sun block cream, skin care cream, acne cream, shower bath cream, all of them must be fit for the nature of the skin.

5.2 The hairs products, like shampoo or conditioner from other kinds of herbal, must be fit for each kind of hair such as shampoo wan hang chorakhe, shampoo makrut, shampoo with conditioner, style hair cream.

5.3 Perfume

4.2 The Presentation of In-depth Interviews

4.2.1 The producer of herbal cosmetic products.

1. History of the development of herbal cosmetic products.

Chaophaya Abhaibhubejhr Hospital started to promote the use of herbal products from B.E. 2526 by concept to develop the quality of life of the population, by helping them to self help in health by the use of local herbs. Chaophaya Abhaibhubejhr Hospital leading them to replace bought medicine from abroad by local herbal products and so helping to save yearly tens of millions of baths. Many diseases can be cured by herbs and can be found easily. Moreover, besides their use as medicine, herbal products can also be used daily by Thai people as herbal supplementary foods, herbal beverage, and herbal cosmetics. Chaophaya Abhaibhubejhr Hospital therefore started to study the local known herbs to be developed as herbal cosmetics and herbal products, by separating the good from the poisonous ones, the ones that can be used as food. Chaophaya Abhaibhubejhr Hospital studied toxicology to determine the possibility to use them, specially consulting the list of Thai traditional medicine textbook together with scientific publishing, and mixing data from past with those modern pharmacy.

At the beginning, Chaophaya Abhaibhubejhr Hospital used herbal medicine within the hospital to care diseases according to the symptoms or which can heal alone without use of medicine like headache, flatulence, and diseases which modern medicine can not cure, but herbal can help such as Pha ya yo(*Clinacanthus nutans*)leaf which is used to cure herpes simplex.

From that starting point, Chaophaya Abhaibhubejhr Hospital developed many kinds of herbal products, such as herbal supplementary foods, herbal beverage, and herbal cosmetics, which were used enough only in hospital but were not enough to be sold to the people, stressing the local production of herbal in order to create jobs and income for the local people.

2. Concept of the development of herbal cosmetic products.

When Thailand started the economical crisis. It deeply affected the people and Chaophaya Abhaibhubejhr Hospital was similarly affected and it was necessary to find a way to reduce the burden of the people. At the same time "Back to nature" was a fashion helping the people to start the use of herbal products and specially herbal cosmetics becoming a fashion. At that time the cosmetics from herbal products were imported from abroad and were very expensive. As the biodiversity of Thailand was high that had many kinds of herbs can develop cosmetics, the use of the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital was possible. Chaophaya Abhaibhubejhr Hospital started to produce the herbal cosmetic products by starting to study the data of using of herb for beauty specially in Thai traditional list of beauty products and in the local data in order to produce and serve out cosmetics of herbal products with a satisfying price instead of buying them from abroad in order to help the people to produce the herbal cosmetic products, to find jobs and improve their income. Subsequently it helped to improve their economic situation, quality of life and consequently Chaophaya Abhaibhubejhr Hospital.

3. Results

Today Chaophaya Abhaibhubejhr Hospital is able to produce 46 different kinds of the herbal products with the label "Abhaibhubejhr" for sale to customers. The 12 kinds of the herbal cosmetic products are the following:

1. Boraphet shampoo
2. Ginger shampoo
3. Butterfly pea hair conditioner
4. Scalp treatment emblic myrobalan and myrobalan wood
5. Tamarind herbal cleansing cream
6. Turmeric liquid soap
7. Turmeric soap
8. Mangosteen peel soap
9. Indian mulberry soap
10. Rice bran soap
11. Cucumber cream
12. Herbal toothpaste

From the achieved program it becomes clear that people were interested to use Chaophaya Abhaibhubejhr Hospital herbal products. Among them, the herbal cosmetic products were the most appreciated and best offered in sale. By the way, the hospital get monthly about six million bahts as new income whose the profit was 1.8 million baths; in the same time, allowing the herbal products demonstration and development project to be independent, no more dependent on the budget of the hospital from the government.

4. Adoption of herbal cosmetic products

Most people having adoption of herbal cosmetic products were the middle class social who reacted positively to the hospital promotion efforts to call

attention to the herbal cosmetic products. The herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital were very suitable for middle class citizen needs. This people are more educated, interested in the herbal cosmetic products and are following the fashion "Back to nature". To follow this fashion they needed the herbal cosmetic products to replace the synthesis cosmetics products made and imported from abroad and consequently are expensive. As the herbal cosmetic products became available everywhere, the possible customer who mistrusted the cosmetics sold everywhere, changed their mind and trusted more and more the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital

5. Problems and obstacles

1) Law: according to the official rule in this kind of business, as Chaophaya Abhaibhubejhr Hospital is a governmental hospital, it can not do the business as a private one and therefore lacks flexibility as impossibility to be registered as commercial, to register and protect rights on products. or to have a legal representation.

2) Lack of research: research in the field of the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital, has to be done, even if its cosmetics are now everyday life products in order to improve the conviction of users.

3) Services: the fact that a lot of people are interested in the herbal cosmetic products is a casually cause of difficulty and slowness in the customers services, specially when groups of visitors are occupying the herbal shop, or if members are buying big quantities of the herbal cosmetic products. Also checking the herbal cosmetic products and paying the bills are slow in the same circumstances. Causing a lack of official to other tasks like as guide the products.

6. Suggestions

1) The project of the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital could do the business of promoting the herbal products in a juristic person by creating a foundation under the direction of Chaophaya Abhaibhubejhr Hospital that would make a lot of activities easier such as to help the diffusion of the herbal cosmetic products in the country and abroad, and may be to get legal representatives of Chaophaya Abhaibhubejhr Hospital and acting with its authorization.

2) Investigation by Chaophaya Abhaibhubejhr Hospital in collaboration with other groups of researchers, nation or foreigners to unite all kinds of data concerning the herbal cosmetic products and their diffusion in scientific journal will increase trust and confidence in the products.

3) Adequately increase the number of official in the herbal shop and prepare package adequately to contain big quantity of the herbal cosmetic products for customers buying a lot of them or wholesale, package fitted to quicken numbering the items and easing the bill's payment, will also help a lot.

4) Increase the kind of the herbal cosmetic products by stressing the local herbs.

5) Stress other hospitals to develop the herbal cosmetic products by the local herbs in order to develop their use in every part of Thailand.

4.2.2 Members of the herbal shop

The members of the herbal shop of Chaophaya Abhaibhubejhr Hospital are the important mechanism of the diffusion of the herbal cosmetic products everywhere when people are unable to come to buy them at Chaophaya Abhaibhubejhr Hospital because the hospital has no branch. Therefore the distribution of the herbal cosmetic products by the members help a lot to the acquaintance by the people and the increasing of the number of users of Chaophaya Abhaibhubejhr Hospital.

1. The adoption of herbal cosmetic products.

The publicity about the herbal cosmetic products information by media raised more interest of the people for them. The cause seems to be the trust in quality and liability of the herbal cosmetic products price, and good quality. Helping also the interest to their newness, and natural origins. People using them came from all the class of the population, both male and female, from all ages, but majority and more stable part of customers came from the middle class. Meanwhile problem of wide distribution of the herbal cosmetic products remained heavy as many people cannot come to buying them in the herbal shop of Chaophaya Abhaibhubejhr Hospital, even with the middle solution of using members as middle man to assure relatively bigger sale. The better welcomed product was tamarind herbal cleansing cream.

2. Problems and obstacles.

1) Price. The herbal cosmetic products would be sold a few higher than the usual actual price in order to drag the people to a wider use of the natural Thai products, modifying their Thai mentality when buying. But the problem remains that members get a discount of only 10 % when buying for more than 2,000 baht and that they have a lot of side expenses so that they have to fix of resale higher than usual price. That led the people feel that the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital are expensive, influencing the adoption of them.

2) Knowledge. The members are not able to give specific explanations effects to people showing interest or to user suffering by them, leading users or people showing interest to lose confident in products.

3. Suggestions.

1) Concerning to the special right of members to get a discount of more than 10 % when buying for more than 10,000 baht. It will be wish to let them able to sell the herbal cosmetic products at price near the usual ones, to help people to buy them at a price near to the herbal shop of Chaophaya Abhaibhubejhr Hospital's one and to let members be able to continue their job.

2) It is highly desirable to publish a document concerning the herbal cosmetics giving all the useful details for members, in order to help the members to give explanations of answering questions. It would improve the trust of the users of the herbal cosmetic products.

4.2.3 The group of users of herbal cosmetic products.

1. The adoption of herbal cosmetic products.

From in-depth interviews of users of herbal cosmetic products found that the majority of them come from middle class of the population and have residence or working place in Prachinburi province or proximity. These users starred to use the herbal cosmetic products from other people counseling them or by observing to use good results in other users. Some people were informed about the herbal cosmetic products by media like television, radio and newspaper. Some people find efficiency of the herbal cosmetic products by using them and they continued by confidence in their efficiency and their trust in Chaophaya Abhaibhubejhr Hospital. Because of Chaophaya Abhaibhubejhr Hospital is the government hospital. The people come from middle class of the population adopt the herbal cosmetic products more than people resident in rural districts, whose majority are agriculturists having low incomes, and who interested other herbal products more than the herbal cosmetic products. They are considering the herbal cosmetic products as unnecessary luxurious expenses, too expensive and not available everywhere. Therefore, they did not use them regularly but only when they must go to the very far Chaophaya Abhaibhubejhr Hospital.

Users of herbal cosmetic products have a good practical knowledge of the properties of them from their direct experience and by exchanging experiences with other users. But that knowledge has to be improved, because lack of self – confidence in knowledge from their experience. Users of the herbal cosmetic products have a good attitude toward herbal cosmetic products. The majority of users thinks the herbal cosmetic products are good for anyone, whatever age or gender, because most of the herbal cosmetic products can be used in everyday and do not outmode and on contrary because they are in fashion accorded to "back to nature". The users of the herbal cosmetic products will help to change Thai mentality, promote Thai economy and conserve Thai wisdom. At health value, the herbal cosmetic products can be used exactly like general cosmetics. Therefore the herbal cosmetic products are unnecessary for health but have good properties and are not dangerous. At the point of awareness of environment, the herbal cosmetic products are better than the synthesis ones because their are the nature products and do not destroy the environment.

2. Problems and obstacles.

1) Places of distribution: The majority of the users are inconvenience to buy herbal cosmetic products and do not allow suitable place to buy them.

2) Information: The herbal cosmetic product information are rare with the consequence that its cosmetics are not well known. The publications are rare and not interesting. An article in documents are not detailed, specially the data concerning properties, directions, possible side effects.

3) Services: The herbal shop assistants are too low and not enough to service. Therefore, they can not service to every customers and slow down the service.

3. Suggestions.

To Chaophaya Abhaibhubejhr Hospital should:

1) multiply the places where the herbal cosmetic products are available so that it would be no more necessary to come to Chaophaya Abhaibhubejhr Hospital to get them, even if a little more expensive price that the normal price is asked.

2) raise the herbal cosmetic products information and adjust the article in documents with more technical data to increase the confidence of users.

3) increase the numbers of herbal shop assistants, especially, in busy hours like during weekend and holidays with plenty of visitors coming to visit the hospital and herbal shop.

CHAPTER V

DISCUSSION

Based on the objectives and hypotheses of this study in chapter I, the findings could be discussed as identified below:

5.1 Objectives

1. To study the level of the adoption of herbal cosmetic products.

The results confirmed that the adoption of herbal cosmetic products was at a high level.

2. To study the factors affecting the adoption of herbal cosmetic products.

The results reported that these factors included occupation, convenience to buy herbal cosmetic products, experience of herbal products used, access to herbal cosmetic product information, knowledge of herbal cosmetic products, attitude toward herbal cosmetic products, awareness of environment and modernization.

5.2 Hypotheses

The first hypotheses : The adoption of herbal cosmetic products is at a moderate level.

Counter to hypothesis, the adoption of herbal cosmetic products was at a high level. The hypotheses was rejected.

The second hypotheses : Socio – demographic factors make difference to adoption of herbal cosmetic products.

Gender : Based on statistical test, gender made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Age : Based on statistical test, age made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Education : Based on statistical test, education made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Occupation : Based on statistical test, occupation made a significant difference to the adoption of herbal cosmetic products (at $p < 0.05$) as hypothesized.

Income : Based on statistical test, income made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

The third hypotheses : Motive factors make difference to adoption of herbal cosmetic products.

Convenience to buy herbal cosmetic products : Based on statistical test, convenience to buy herbal cosmetic products used made a significant difference to the adoption of herbal cosmetic products (at $p < 0.01$) as hypothesized.

Experience of herbal products used : Based on statistical test, experience of herbal products used made a significant difference to the adoption of herbal cosmetic products (at $p < 0.001$) as hypothesized.

Experience of problems from the use of cosmetics : Based on statistical test, experience of the cosmetics problems made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Access to herbal cosmetic product information : Based on statistical test, access to herbal cosmetic product information made a significant difference to the adoption of herbal cosmetic products (at $p < 0.01$) as hypothesized.

Knowledge of herbal cosmetic products : Based on statistical test, knowledge of herbal cosmetic products made a significant difference to the adoption of herbal cosmetic products (at $p < 0.001$) as hypothesized.

Attitude toward herbal cosmetic products : Based on statistical test, attitude toward herbal cosmetic products made a significant difference to the adoption of herbal cosmetic products (at $p < 0.001$) as hypothesized.

Value of health : Based on statistical test, value of health made an insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Awareness of environment : Based on statistical test, awareness of the environment made a insignificant difference to the adoption of herbal cosmetic products. The hypotheses was rejected.

Modernization : Based on statistical test, modernization made a significant difference to the adoption of herbal cosmetic products (at $p < 0.01$) as hypothesized.

5.3 Discussion on the Findings

The result of this study found that the adoption of herbal cosmetic products is at a moderate level. By categorizing the stage of adoption of herbal cosmetic products found that the adoption was highest at awareness stage, confirmation stage, implementation stage, interest stage and trial stage respectively because of most of people has received information of the herbal cosmetic products especially the properties of herbal that composed in the herbal cosmetic products are good and safe. Therefore, people feel confident in using of the herbal cosmetic products and advise other people to use them. As in the quantitative research, the result of the qualitative research found that people were convinced in indicator and confident in producer.

The important factors affecting the adoption of herbal cosmetic products was access to herbal cosmetic product information. The result of the quantitative research found that access to herbal cosmetic product information had a significantly related to adoption of herbal cosmetic products at $p < 0.001$. Most of people access to herbal cosmetic product information. By categorizing the level of access to herbal cosmetic product information, people accessed only at a low level. As in the quantitative research, the result of the qualitative research found that most of people having adoption of herbal cosmetic products because of they access to herbal cosmetic product information by media that they are trust. Both mass media such as television, and interpersonal communication. Therefore, people feel trust and confident in using of the herbal cosmetic products.

Attitude toward herbal cosmetic products is successive factor by access to herbal cosmetic product information. The result of the quantitative research found that attitude toward herbal cosmetic products had a significantly related to adoption of herbal cosmetic products at $p < 0.001$. As in the quantitative research, the result of the qualitative research found that people having adoption of herbal cosmetic products because of they had good attitude toward herbal cosmetic products. All this is due to the herbal cosmetic products are developed and produced under the supervision of Chaophaya Abhaibhubejhr Hospital. It is government hospital that completely competent man as well as modern instrument. Therefore, the herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital are believable more than other ones. The herbal cosmetic products are useable for anyone, whatever age or gender, and do not outmode. Moreover, besides using of the herbal cosmetic products help conserve Thai wisdom and promote Thai tread. Hence, attitude toward herbal cosmetic products had related to adoption of herbal cosmetic products.

CHAPTER VI

CONCLUSION

The study was conducted to examine the adoption of herbal cosmetic products, factors affecting the adoption for contribution to promote the adoption of herbal cosmetic products including problems, obstacles and suggestions.

Data in this study were derived from the responses of questionnaires of 400 people and in-depth interviews with the president of Chaophaya Abhaibhubejhr Hospital, pharmacists, sale assistants, members of herbal shop of Chaophaya Abhaibhubejhr Hospital and the herbal cosmetic product customers.

In the quantitative research was analyzed by Statistical Package for the Social Sciences, data were presented by percentage, mean, standard deviation, one-way analysis of variance, t-test, analysis of variance (ANOVA) and multiple classification analysis (MCA).

In the qualitative research was analyzed by descriptive approach analysis.

6.1 Conclusion

6.1.1 Conclusion of the Quantitative Research

1. Socio – demographic Variables

Most people were female, aged 24 – 43 years old. The average age was 34 years old. Most occupation were government official, with graduate degree and earned 5,001 – 10,000 Bath.

2. Motive Variables

Most people had convenience to buy herbal cosmetic products, had experience of the herbal products used at low level, had inexperience of the cosmetics problems, gained access to herbal cosmetic products information at low level, had knowledge of herbal cosmetic products at high level, had attitude toward herbal cosmetic products at high level, had value of health at high level, had awareness of environment at high level and had modernization at high level.

3. The Adoption of Herbal Cosmetic Products

Most people had the adoption of herbal cosmetic products at high level (91.8 %) at moderate level (6.0 %) and at low level (2.2 %). As partly awareness stage, confirmation stage, implementation stage, interest stage, and trial stage respectively.

4. The Factors affecting the adoption of herbal cosmetic products.

Based on the analysis of one-way analysis of variance and t-test was found that experience of the herbal products used, knowledge of herbal cosmetic products, attitude toward herbal cosmetic products and modernization made a significant difference to the adoption of herbal cosmetic products (at $p < 0.001$), access to herbal cosmetic product information made a significant difference to the adoption of herbal cosmetic products (at $p < 0.01$), occupation, convenience to buy herbal cosmetic products and awareness of environment made a significant difference to the adoption of herbal cosmetic products (at $p < 0.05$) and gender, age, education, income, experience of problems from the use of cosmetics and valuation of health made an insignificant difference to the adoption of herbal cosmetic products.

Based on the analysis of analysis of variance was found that the main effect of independent variables consist of occupation, experience in use of the herbal products, access to herbal cosmetic product information experience, knowledge of herbal cosmetic products, attitude toward herbal cosmetic products, awareness of environment and modernization had a significantly related to adoption of herbal cosmetic products at $p < 0.001$. and found that experience in use of the herbal products, access to herbal cosmetic product information, knowledge of herbal cosmetic products and attitude toward herbal cosmetic products had a significantly related to adoption of herbal cosmetic products at $p < 0.001$, modernization had a significantly related to adoption of herbal cosmetic products at $p < 0.01$, occupation had a significantly related to adoption of herbal cosmetic products at $p < 0.05$ and awareness of environment had an insignificantly related to adoption of herbal cosmetic products.

Base on statistical test was found that the model had explained a significant related to adoption of herbal cosmetic products at $p < 0.001$.

Base on the analysis of multiple classification analysis was found that the independent variables are able to explained the adoption of herbal cosmetic products of 19.9 % (Multiple R Squared = 0.199). The multiple coefficient of correlation was 0.446 (Multiple R = 0.446). The people who were housewives, had experience in use of the herbal products at a high level, access to herbal cosmetic product information at a low level, knowledge of herbal cosmetic products at a high level, attitude toward herbal cosmetic products at a high level, awareness of environment at a moderate level and modernization at a high level had the highest adoption of herbal cosmetic products.

6.1.2 Conclusion of the Qualitative Research

The majority of people had adoption of herbal cosmetic products were the middle class. The factors affecting people's adoption of herbal cosmetic products were access to herbal cosmetic product information through the mass media and interpersonal communication, and attitude toward herbal cosmetic products found that the most of user had confidence in their efficiency and their trust in Chaophaya

Abhaibhubejhr Hospital. They are in fashion accorded to "back to nature" and promote Thai economy and conserve Thai wisdom. Therefore, they had adoption of herbal cosmetic products.

6.2 Recommendations

6.2.1 Recommendations of Findings

1. The results of this study suggest the need for increasing the places where the herbal cosmetic products are available to every part of Thailand including dissemination of the herbal cosmetic products to public in order to sustain adoption of herbal cosmetic products.
2. There should be an increase in the dissemination of herbal cosmetic product information and technical data about herbal cosmetic product should be update in order to increase the confidence of users.
3. There should be study or research concerning the development and adjustment of the herbal cosmetic products to high quality and diversity in order to increase trust and confident in the herbal cosmetic products and respond requirement of people.
4. There should be always changed the appearance of the herbal cosmetic products in order to update the herbal cosmetic products form to abreast of the time.
5. There should be stress other hospitals, government organization and other organizations to develop the herbal cosmetic products by the local herbs in order to increase wide spread using of them in every part of Thailand, to create fashion of the herbal cosmetic products, to conserve Thai wisdom, to promote using of Thai trade and to decrease using of the synthesis cosmetics.
6. There should be encourage community to produce the herbal cosmetic products under the supervision of Chaophaya Abhaibhubejhr Hospital in order to provide an opportunity for rural people to use inexpensive herbal cosmetic products, and increase both job and income.

6.2.2 Recommendations of Further Research

1. There should be study on adoption of other kinds of herbal products.
2. There should be study on adoption of other herbal cosmetic products which produced by other producer such as housewives group, government organization and other organizations.
3. There should be study on consuming behavior of use herbal cosmetic products.
4. There should be study on model of the development of production of herbal products concerning philosophy, conceptual, condition, management and resources.
5. There should be study on economy and social effect of agriculturist who grown the herbal plant in order to be raw material of herbal product.

BIOBLIOGRAPHY

Thai

Chaophaya Abhaibhubejhr Hospital. (n.d.). The conduction of herbal and Thai traditional medical of Chaophaya Abhaibhubejhr Hospital. The report to Director of the Bureau of Budget. Mimeographed.

Chutima Ungphakorn. (1996). The adoption of the practice of using recycled paper products by housewives in Bangkok Metropolis. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Food and Drug Administration, Cosmetic Control Division. (2001). Tentative Translation Cosmetic Act. B.E. 2535(1992) [Online]. Available: http://www.fda.moph.go.th/fda-net/html/product/cosmetic/dat/hta.htm [2001, July 12].

_____. (2001). Current Laws and Regulation [Online]. Available: http://www.fda.moph.go.th/fda-net/html/product/cosmetic/cosmetic/page/index-en.html [2001, July 12].

Jitti Rodbangyang. (1986). The adoption of solid waste separation by the wives of police officers in Bangkok Metropolis: A case study of the central police flats. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Kanokwan Yoowong. (1998). A study of farmers' adoption of pesticide-free vegetable cropping. Thesis for Master of Arts in Social Science. (Environmental Education). Faculty of Graduate Studies, Mahidol University.

Mahidol university, Faculty of pharmacy, Department of Pharmacognosy. (1991). Medicine and Natural Products. Bangkok.

Manorot Sittanon. (1997). The adoption on waste treatment methods of industrial entrepreneurs : a case study in Amphoe Samphran Nakhornpathom Province. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Ministry of Public Health, Office of the Permanent Secretary, The Office of Commission for Primary Health Care. (1987). The herbal in Primary Health Care System for Health Worker. Bangkok: The War Veterans Organization of Thailand Press.

Nipa Likitprasirt. (1989). Factors influencing the acceptance of 1 % abate sand granule for controlling aedes mosquito. Thesis for Master of science (Epidemology). Faculty of Graduate Studies, Mahidol University.

Nipa Manunpichu. (1988). Health Education Research. Bangkok: Aksorn Bundit.

Nitaya Suriyachareorn. (1990). The study on farmers' behaviors regarding the insecticide utilization at Ban Phaeo District, Samut – Sakhon Province. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Nitsiri Ruangrungsri & Phayom Tontiwat. (1991). Herbal Plants. Bangkok: Odeint store.

Nongnuch Impitak. (1997). The adoption of green products for environmental conservation : A case study of nursing students in the central and eastern regions of Thailand. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Pennapa Subcharoen. (Ed) (1995). Thai herbs in Globalization. Institute of Thai Traditional Medical, Department of Medical Services, Ministry of Public Health. Bangkok: The War Veterans Organization of Thailand Press.

_____. (1996,May). Value of Herbs and Development of Thai Social. Paper presented at seminar of the Herbal Plant Revival for Thai Social 13 – 17 January 1994, Maruay Garden Hotel, Bangkok.

Phayao Meuenwongyath. (1994). The Progressive of Herbs: Revised from Textbook of Herbal Science. Bangkok:

Phimphon Leelaphonphisitr. (1989). Cosmetics for skin. Bangkok: Odeint store.

Pimolpan Pityanukul. (1990). Principles of Pharmaceutical and Cosmetic Formulations. Bangkok: Fame Production.

Piyarat Nimsakul. (1996). Housewives' preferences for organically grown vegetables : A case study at Donmuang District in Bangkok Metropolis. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Prasan Tangsikaboot. (1990). Psychosocial aspects determining the farmers utilization behavior of insecticides for vegetation growing in suburb. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Prathana Yuktiratana. (1996). The opinion towards the products from alternative agriculture of people in Bangkok Metropolis. Thesis for Master of Arts in

Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Promjit Saralamp, Wongsatit Chuakul, Rungravi Temgivirirkkul & Terry Clayton. (1996). Medicinal Plants in Thailand Volume I. Bangkok: Amarin Printing.

Rungratana Ruangnatheetaph. (1992). Spices and Herbs. Bangkok: Karnsadsana Press.

Rudeekorn Yarnsungvornchai (1994). Factors affecting agriculturalists' adoption of herbs as pesticide: a case study of Soidown District Chantaburi Province. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Sirinart Soontornsorn. (1994). The adoption of household sewage treatment of the people in Nakhornpathom municipal zone. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Suchat Prasertrathasin. (1993). Research Methodology for Social Science. Bangkok: National Institute of Development Administration.

Thaiand Institute of Scientific and Technological Research. (1989). The investment of the herbal products.

Thaipun Group. (2000). Substances of Plants in Cosmetic Process. [Online]. Available: http://www.thaipun.com/Beauty/beauty-7.htm [2000, August 12].

_____. (2000). Standard of Herbs. [Online]. Available: http://www.thaipun.com/phar3.htm. [2000, August 12].

The National Commission Organizing the Celebration of the 50th Anniversary of His Majesty's Accession to the Throne. (1996). Medical Plants Garden in Phutthamonthon. Published in Commemoration of the Celebration of the 50th Anniversary of His Majesty's Accession to the Throne B.E. 2539.

Tippawan Kunsisut. (1997). The adoption and use of energy efficient appliances by people living in Bangkok Metropolitan area : A case study of public corporation with EGAT's electricity conservation program. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Umadee Tanaponpadungkul. (1995). Factors affecting the acceptance of solid wastes separation case study of condominium residents in Bangkok. Thesis for Master of Science (Technology of Environment Management). Faculty of Graduate Studies, Mahidol University.

Utis Gerdpial. (1986). Feasibility study on the adoption of household water filter in rural area. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

Wilasinee Wongprasert. (1986). The adoption of using safety helmets of the motorcycle riders in Bangkok Metropolis. Thesis for Master of Arts in Social Science. (Environment). Faculty of Graduate Studies, Mahidol University.

English

Foster, George M. (1973). Traditional Societies and Technological Change. New York: Harper & Row Publishers.

Kotler, Philip & Armstrong, Gary. (1989). Principles of Marketing. Englewood Cliffs, New Jersey: Prentice Hall.

Norman R. Farnsworth & Nunthvan Bunyapraphatsara. (1992). Thai Medical Plants Recommended for Primary Health Care System. Prachachon Co., Ltd.

Rogers, Everett M. (1968). Diffusion of Innovations. New York: The Free Press.

_____. (1983). Diffusion of Innovations. (3rd) New York: The Free Press.

Rogers, Everett M. & Shoemaker, Floyd F. (1971) Communication of Innovation. A Cross – Culture Approach (2nd ed.). New York: The Free Press.

No. ☐☐☐

Questionnaire

The adoption of herbal cosmetic products by people A case study of the herbal cosmetic products produced by Chaophaya Abhaibhubejhr Hospital in Prachinburi province

---

Direction

1. The herbal cosmetic products mean herbal cosmetics of Chaophaya Abhaibhubejhr Hospital, consist: boraphet shampoo, ginger shampoo, butterfly pea hair conditioner, scalp treatment emblic myrobalan and myrobalan wood, mangosteen peel soap, turmeric soap, turmeric liquid soap and tamarind herbal cleansing cream.
2. Please fill in the blanks and mark ✓ in the box when necessary.
3. Answer all questions.

Part I People' socio – demographic characteristics

1. Gender ☐(1) Male ☐(2) Female
2. Age ..... years (over 6 months count into a year)
3. Occupation

   ☐(1) Government official ☐(2) State enterprise official / company official / Employees

   ☐(3) Merchant/self – employed ☐(4) Students

   ☐(5) Housewives ☐(6) Agriculturist

4. Education

   ☐(1) None ☐(2) Primary school diploma

   ☐(3) High school diploma ☐(4) Undergraduate level

   ☐(5) Graduate degree ☐(6) Post graduate degree

5. Average income per month (not yet deducted other expenses) ..... baht
6. Space from residence to the herbal shop of Chaophaya Abhaibhubejhr Hospital ..... Km

7. Is it convenient for you to buy herbal cosmetic products?

☐ (1) Convenient

☐ (2) Inconvenient, because.....

8. Can you buy herbal cosmetic products from the other places? (except the herbal shop of Chaophaya Abhaibhubejhr Hospital)

☐ (1) No

☐ (2) Yes, (Please specify the places) .....

Part II Experience in use of herbal products

9. How many kinds of herbal cosmetic products do you use? .....kinds

☐ (1) Boraphet shampoo ☐ (2) Ginger shampoo

☐ (3) Butterfly pea hair conditioner ☐ (4) Scalp treatment emblic myrobalan and myrobalan wood

☐ (5) Mangosteen peel soap ☐ (6) Turmeric soap

☐ (7) Turmeric liquid soap ☐ (8) Tamarind herbal cleansing cream

10. How long have you been using herbal cosmetic products? ..... months.

11. Why do you use the herbal cosmetic products? (You can give more than one answer)

☐ (1) Cheap ☐ (6) Easy to buy

☐ (2) Safety ☐ (7) Someone persuades you to use.

☐ (3) Confident of the producer. ☐ (8) Fashion

☐ (4) Convince in the properties. ☐ (9) Make you modern

☐ (5) The package is modern and beautiful. ☐ (10) Others .....

12. Have you ever seen others who use the herbal cosmetic products?

☐ (1) No (Proceed to item No. 14)

☐ (2) Yes

13. How many kinds of the herbal cosmetic products do they use? .....kinds

☐ (1) Boraphet shampoo ☐ (2) Ginger shampoo

☐ (3) Butterfly pea hair conditioner ☐ (4) Scalp treatment emblic myrobalan and myrobalan wood

☐ (5) Mangosteen peel soap ☐ (6) Turmeric soap

☐ (7) Turmeric liquid soap ☐ (8) Tamarind herbal cleansing cream

14. Have you ever used other brands of the herbal cosmetics?

☐ (1) No

☐ (2) Yes, (Please specify).....

15. Are you still using these products?

☐ (1) No

☐ (2) Yes, (Please specify).....

16. Have you ever used other herbal products? (beside the cosmetics products)

Kinds	Ever	Never
- Herbal medicine		
- Herbal food supplementary		
- Herbal beverage		
- Others (Please specify)		

Part III Experience of problems from the use of cosmetics.

17. Have you ever got problems from the use of cosmetics?

Types	Never	Ever	Problems
- Synthesis cosmetics			
- Others herbal cosmetic products			
- The herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital			

18. Have you ever seen someone who had problems from the use of cosmetics?

Types	Never	Ever	Problems
- Synthesis cosmetics			
- Others herbal cosmetic products			
- The herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital			

Part IV Access to the herbal cosmetic product information.

19. Have you ever got the herbal cosmetic product information?

☐ (1) No (Proceed to item No.21) ☐ (2) Yes

20. How often do you get this information through the follow media?

Media	Never	Once a month	Once – twice a month	3 – 4 times a month	More 4 times a month
Television					
Radio					
Newspaper					
Magazine					
Advice / Brochures / Publications					
Friends and Relations Communications					
Hospital / Hospital official					
Other					

21. Do you want to got any additional herbal cosmetic product information?

☐ (1) No (Proceed to part V) ☐ (2) Yes

22. Which media do you want to get?

☐ (1) Television
☐ (2) Radio
☐ (3) Newspaper
☐ (4) Magazine
☐ (5) Advice / Brochures / Publications
☐ (6) Friends and Relations Communications
☐ (7) Hospital / Hospital official
☐ (8) Other .....

23. Which topics do you want to get? (Please specify)

.....
.....
.....
.....

Part V Knowledge of herbal cosmetic products

Item	Yes	No
1. Herbal plants in herbal cosmetic products are easily to find.		
2. Herbal cosmetic products are general cosmetics that unnecessary to registered for production and sale.		
3. Turmeric has effect of wounds healing.		
4. The effect of mangosteen peel can inhibit bacteria.		
5. The properties of AHA in Tamarind Herbal Cleansing Cream can remove cell and rebuild cell that AHA is reducible wrinkle and spotty facial skin.		
6. Herbal cosmetic products are an innovation so they are not Thai wisdom.		
7. The using of herbal cosmetic products are necessary use many quantity because it is no efficiency if used a little quantity.		
8. The using of herbal cosmetic products do not allergy for user.		
9. The properties of herbal cosmetic products are different from the properties of using the herbal for beauty of Thai people in post.		
10. Ginger shampoo has high efficiency in cleansing. People who have weakened hair should not use because it makes falling hair.		
11. The using of tamarind herbal cleansing cream should not used continuously because AHA makes dry facial skin.		
12. The continual using of herbal cosmetic products for a long time is hazard.		

Part VI Attitude toward herbal cosmetic products

Attitude toward herbal cosmetic products	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Herbal cosmetic products are developed to easily using form.					
2. Always using herbal cosmetic products is dangerous.					
3. Using of herbal cosmetic products is outmoded.					
4. Synthesis cosmetic products are safe than herbal cosmetic products.					
5. The properties of synthesis cosmetic products are better than herbal cosmetic products because they are more expensive.					
6. Herbal cosmetic products increase income to agriculturist.					
7. Using of herbal cosmetic products is one expedient of solution of economic crisis.					

Attitude toward herbal cosmetic products	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
8. The properties of most of herbal cosmetic products are overrated.					
9. Using of herbal cosmetic products should be promoted.					
10. Herbal cosmetic products are inappropriate for teenagers.					
11. Using of herbal cosmetic products is fashion.					
12. Herbal cosmetic products are replaced with synthesis cosmetic products.					

Part VII Valuation of health

Valuation of health	Always	Often	Never
1. Drink a lot of liquors or beer.			
2. Avoid eating high sugar and fat.			
3. Avoid sunlight during the day.			
4. Usually scratch, squeeze or touch a face.			
5. Dried your face with clean towel after washing.			
6. Squeeze or scratch acne for treat by yourself.			
7. Strongly scrubs the head during shampooing.			
8. Sleep late or lesser than 6 – 8 hours a night.			
9. Clean the bed every week.			
10. Wear unwashed clothes.			

Part VIII Awareness of environment

Awareness of environment	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Using herbal cosmetic products can reduce the residual chemical in environment.					
2. Using green products for environment conservation can decreases environment problems.					
3. Using herbal cosmetic products can promote growing and breeding herbal plants more widely.					
4. Herbal conservation increases the biodiversity that is good for ecology.					
5. The consuming organically grown vegetables is the conservation of soil and water.					

Awareness of environment	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
6. The use of herbal cosmetic products is the forest destruction motivation.					
7. The forest destruction has an effect on the fertility of soil and water.					
8. The forest destruction has no effect on herbal plants.					
9. The chemicals using in life do not cause the environment problems.					
10. Choose cosmetics which test with animal.					
11. The solution of environment problems is only the government function.					
12. Everybody should realize the environment problems.					

Part IX Modernization

Modernization	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. You like to follow, learn, search or attend on new issue or newness.					
2. You are always interested in news or events.					
3. You are usually anti social change.					
4. You want to test the new products advertised on media.					
5. You like to do the challenge task that tests your ability.					
6. You always try to use new products in order to find the better ones.					
7. You always lead to change or newness to anybody.					
8. You always look for new knowledge.					
9. You always attempt to adapt yourselves to various environments.					
10. You always accept the innovation or newness immediately after study or search about it and found that it is useful.					

Part X Adoption of herbal cosmetic products

Adoption of herbal cosmetic products	agree / yes	uncertain	Disagree / no
Awareness stage 1. You are aware of an effect of herbs in herbal cosmetic products.			
2. The properties of herbal cosmetic products are good properties.			
3. You accessed to herbal cosmetic product information.			
4. Other people suggested you to use herbal cosmetic products.			
5. You are aware that herbal cosmetic products are safety products.			
Interest stage 6. You studied on properties of herbal cosmetic products.			
7. You asked for detail of herbal cosmetic products.			
8. You are interested in herbal cosmetic products by information which you access.			
9. You talked to change experience or data about herbal cosmetic products.			
10. You followed herbal cosmetic product information.			
11. You observed other people who used herbal cosmetic products.			
Trial stage 12. After receiving herbal cosmetic product information, you decide to try them.			
13. At the beginning, you use only a little quantities of herbal cosmetic products.			
14. You tested for allergy before you decide to use herbal cosmetic products.			
15. You desired to try all of herbal cosmetic products.			
Implementation stage 16. You are pleased to use herbal cosmetic products.			
17. You always used herbal cosmetic products.			
18. You used herbal cosmetic products to replace synthesis cosmetic products.			
19. You decided to use herbal cosmetic products because of their good efficiency.			
20. You buy herbal cosmetic products for use in your home.			

Adoption of herbal cosmetic products	agree / yes	uncertain	Disagree / no
Confirmation stage 21. You desired to use all of herbal cosmetic products.			
22. You continually used herbal cosmetic products.			
23. You feel confident in using of herbal cosmetic products.			
24. You advised other people to use herbal cosmetic products.			
25. If Chaophaya Abhaibhubejhr Hospital has new herbal cosmetic products, you are pleased to use them.			

Part XI Problems, obstacles and suggestions of herbal cosmetic products

Types	Problems, obstacles	Suggestions
- Boraphet shampoo	....	....
- Ginger shampoo	....	....
- Butterfly pea hair conditioner	....	....
- Scalp treatment emblic myrobalan and myrobalan wood	....	....
- Mangosteen peel soap	....	....
- Turmeric soap	....	....
- Turmeric liquid soap	....	....
- Tamarind herbal cleansing cream	....	....
- Others (i.e. marketing, price, place)	....	....

Would you like to require developing new herbal cosmetic products of Chaophaya Abhaibhubejhr Hospital?

☐ No

☐ Yes (Please specify) .....

.....

.....

BIOGRAPHY

NAME	Mr. Dansroung Wannawongsoun
DATE OF BIRTH	25 March 1969
PLACE OF BIRTH	Prachinburi, Thailand
INSTITUTIONS ATTENDED	Sukhothai Thammathirat Open University, 1990 – 1992: Bachelor of Public Health Sukhothai Thammathirat Open University, 1993 – 1994: Bachelor of Public Health (Occupational Health and Safety) Mahidol University, 1998 – 2001: Master of Art (Environment)
POSITION & OFFICE	1997 – Present, the Public Health Office of Prachinburi Position: Senior Public Health Officer (Sanitation)