

THESIS TITLE GLUCARIC ACID AND BILIRUBIN IN BILE
AUTHOR WEERAWAN SIWAWATKUL
DEGREE MASTER OF SCIENCE (BIOCHEMISTRY)
ADVISOR ASS. PROF. ARUN PAUSAWASDI
DEPARTMENT BIOCHEMISTRY, SIRIRAJ HOSPITAL
FACULTY GRADUATE STUDIES, MAHIDOL UNIVERSITY
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ABSTRACT

Glucaro-1:4-lactone: a lactone of glucaric acid is a potent inhibitor of enzyme β -glucuronidase in bile. It was found that this enzyme played a role in the precipitation of calcium bilirubinate: the main component found in pigment gallstones.

In order to gain some information on pigment stone formation, a method for determination of glucaro-1:4-lactone (measured as glucaric acid) and bilirubin (unconjugated and total bilirubin) were set up. The comparative studies of glucaric acid levels and bilirubin levels in bile of three different gallstone groups: cholesterol stone, calcium bilirubinate stone and black-pigment stone, and also of the control group (from patients who were laparotomized with diseases other than cholelithiasis) were performed.

Gallstones from 33 patients were classified by main components (identified by using infrared spectroscopy) into 6 cases of cholesterol stones, 10 cases of black-pigment stones and 17 cases of calcium bilirubinate stones. Gallbladder bile from gallstone patients and from 10 cases of control patients were chemically analysed for glucuric acid and bilirubin contents.

It was found that the mean concentration of glucuric acid in bile of calcium bilirubinate stone group (mean = $12.17 \pm 6.54 \mu\text{g/ml}$) was significantly lower than that of control group (mean = $19.89 \pm 10.80 \mu\text{g/ml}$, $p < 0.05$). Percentage of unconjugated bilirubin in total bilirubin was high in every stone group particularly the calcium bilirubinate stone group (mean = $3.17\% \pm 3.13\%$) which was significantly higher than that of control group (mean = $1.96\% \pm 0.64\%$, $p < 0.02$) and was even significantly higher than that of another pigment stone type: the black-pigment stone group (mean = $1.08\% \pm 0.82\%$, $p < 0.05$).

It was revealed from this study that concentrations of glucuric acid in bile of Thai people were much lower than that of Japanese people, previously reported. The reason for which must be further studied.

BIOGRAPHY

NAME	-WEERAWAN SIWAWATKUL
DATE OF BIRTH	-FEBUARY 9, 1953
PLACE OF BIRTH	-BANPAIW, SAMUTR-SAKORN
INSTITUTION ATTENDED	-WAT THUMACHARIYAPIROM SCHOOL, SAMUTR-SAKORN MARCH, 1967....CERTIFICATE OF MATHAYOMSUKSA III
	-SATRI WAT RAKUNG SCHOOL, BANGKOK MARCH, 1970....CERTIFICATE OF MATHAYOMSUKSA V
	-CHULALONGKORN UNIVERSITY, PANGKOK APRIL, 1974....BACHELOR OF SCIENCE IN GENERAL SCIENCE, FACULTY OF SCIENCE