Analysis of 33 vesical calculi, collected from the Department of Surgery, Faculty of Medicine, Chiang Mai University, showed that most of them contained uric acid; half of the stones contained more than 50 gm% uric acid, while 14% of the stones contained less than 10 gm% uric acid.

Ten of the calculi containing more than 50 gm% uric acid were used for dissolution studies wherein various solvents, including 0.1 N hydrochloric acid, 3% citric acid, EDTA, veronal buffer and 0.3% lithium carbonate, were compared for solvent effectiveness. Lithium carbonate, which is a basic solution, dissolved the pulverized stones most readily.

A soluble, non-dialyzable substance, presumed to be the commonly-referred to organic matrix of calculi, was studied as to its dry weight, its ninhydrin-positive reactivity and its UV absorption at 280 mp. Five amino acids, arginine, histidine, phenylalanine, tryptophan and tyrosine, were measured quantitatively in the hydrolysates of the matrix material from eight different stones. The average dry weight of non-dialyzable substances, or matrix material, represented about 5.34 gm% of stone weight, ninhydrin-positive substances, about 3.47 gm%, and substances absorbing at 280 mp, about 3.18 gm%. The ratios of the amino acids were not constant from stone to stone.

The solubility of uric acid in urine from normal subjects and from patients with a history of vesical calculi was found to be similar at similar pH values. The solubility of uric acid in aqueous solutions,
such as distilled water and sodium phosphate buffer, was less than that in urine when measured at similar pH values.

The influence of normal urinary components upon the solubility of uric acid was studied under carefully controlled concentration and pH conditions. It was observed that variation of urea concentration in distilled water influenced the solubility of uric acid whereas increasing urea concentration of urine did not affect uric acid solubility.

Sodium chloride caused a slight decrease in the solubility of uric acid in aqueous solutions, but when sodium chloride was added to urine it did not affect uric acid solubility.

Non-dialyzable substances in urine were found to increase the solubility of uric acid, and it was observed that the non-dialyzable substances from patient's urine had less ability in increasing uric acid solubility than that from normal urine. Pure proteins, serum bovine albumin, egg albumin, casein and human serum globulin, in aqueous solutions did not increase the solubility of uric acid, and casein actually caused a decrease in the solubility of uric acid.
VITA

NAME: Ratree Pimpantha.

PERMANENT ADDRESS: 212, Khunkrai Road, Supanburi.

DEGREE AND DATE TO BE CONFERRED: Master of Science, 1967.

DATE OF BIRTH: 5, August 1940.

PLACE OF BIRTH: Supanburi, Thailand.

SECONDARY EDUCATION: The Preparation School, Bangkok.

COLLEGIATE INSTITUTIONS ATTENDED:

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<td>Chulalongkorn University</td>
<td>1959-1964</td>
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<td>University of Medical Sciences</td>
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MAJOR: Biochemistry.