

Thesis Title Determination of the glomerular filtration rate in
 normal Thai Subjects.

Name Nujaree Hakom

Degree Master of Science (Physiology)

Thesis Supervisory Committe

 Supatra Lohsiriwat, M.D.

 Suwana Hungspreugs, M.D.

 Phumara Talalak, M.D., Dr.Med., D.T.M., Dip.Amer.
 Board of Path. (Haematology)

Date of Graduation 24 November BE, 2532 (1989)

ABSTRACT

The purpose of this study is to find out the normal range and mean value of glomerular filtration rate in Thai subjects, which will extend our understanding in renal physiology among Thai people and can also be a more righteous tool for clinicians to aid in the investigation, diagnosis and treatment of renal diseases among Thai patients. One hundred thirty two normal Thai subjects were divided into four groups according to their age and sex : 40 young males, 4 young females, 5 elderly males and 23 elderly females. The endogenous creatinine clearance was determined by collecting a twenty-four hour urine specimen and a fasting blood sample in the morning. The urinary samples were routinely analysed, tested for glucose, protein, ketone and heme, centrifuged and studied microscopically. Urinary creatinine excretion was determined. The fasting venous blood samples

were collected for haematocrit and serum creatinine analysis. The creatinine clearance was calculated from urinary and serum creatinine. The results showed that plasma and urinary creatinine were higher in males than in females of both young and elderly groups. The plasma creatinine in young males was slightly lower than in elderly males whereas that in young females was slightly higher than in elderly females. The urinary creatinine in the young was higher than that in the elderly in both sexes. The creatinine clearance in young males was higher than that in young females even when the body surface area was considered in the calculation. This might be due to the larger muscle mass in men. In the elderly the creatinine clearance was not much different between males and females (though the value in the females was slightly higher than in the males when corrected for body surface area.) There was a significant correlation between GFR and BSA ($r = 0.4445$, $P = 0.001$) when a total of 132 subjects were analysed as a single large group. The reverse correlation between $GFR/1.73 \text{ sq.m.}$ and age was also shown which might be due to physiological or any concealed pathological changes in aging. The mean and range value of creatinine clearance were 80 ± 13.31 (56-113), 64 ± 9.78 (48-89), 60 ± 8.77 (51-74) and 60 ± 8.66 (42-72) ml./min.; and when corrected for body surface area they were 85 ± 13.79 (59-116), 76 ± 12.32 (51-104), 61 ± 6.95 (53-71) and 68 ± 9.23 (49-81) ml./min./1.73 sq.m. in young males, young females, elderly males and elderly females, respectively. The study showed a wide range of creatinine clearance, in normal Thai subjects which might be due to the individual variation of body size, muscle mass, age, sex, physical activity and protein intake.