Thesis Title The influence of soybean compared with soybean-egg diets on protein-calorie status and protein metabolism in healthy men

Name Preeya Leelahagul

Degree Doctor of Science (Nutrition)

Thesis Supervisory Committee

Vichai Tanphaichitr, M.D.,Ph.D.,F.A.C.P.

Somjai Wichaidit, Ph.D.

Wirapong Chatranon, M.D.,Ph.D.

Krisana Kraisintu, Ph.D.

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ABSTRACT

This study was carried out to investigate the influence of soybean compared wiht soybean-egg diets on protein-calorie status and protein metabolism. Seven healthy men , aged 30-35 yr, participated in a 25-day metabolic study. They received protein-free diet (PF) for days 1 and 15, vegetarian diet (VD) for days 2-11, regular diet (RD) for days 12-14, and ovovegetarian diet (OV) for days 16-25. Energy intake for each subject receiving PF, VD, or OV was held constant according to his energy intake during the baseline (BL) period plus 1 SD whereas RD was served ad libitum. Energy distributions of VD and OV were 15, 30, and 55% derived from protein, fat, and carbohydrate, respectively. The protein sources of VD were soybean (90%) and rice (10%) whereas those of OV were

soybean (72%), egg (18%), and rice (10%). The substituting soybean protein by egg protein while total nitrogen and energy intake being kept constant no further increase in positive nitrogen balance was observed. This is consistent with (a) the similar figures of apparent digestibility, biological value, and net protein utilization of VD and OV, and (b) the anthropometric data which revealed the preservation of the somatic protein status. All of the subjects had serum total protein and albumin levels in the acceptable levels throughout the study. The decrease in their mean serum transferrin levels during the study was most likely due to inadequate energy intake. The decrease in their serum RBP levels was possibly due to low vitamin A intake derived from carotene. The creatinine coefficient in our subjects on the BL diet was 15 mg/kg which was lower than that in American subjects. This reflects lower muscle mass and lower meat protein intake in our subjects. Their creatinine clearance varied considerably because of the variation in urinary creatinine excretion. The influence of dietary protein and nucleic acid intake on urinary uric acid level is also evident in our study by the significant positive correlation between the protein intake and urinary uric acid excretion. The soybean protein intake at 13.5% of total dietary energy did not cause hyperuricemia and uricosuria. Based on the overall results, we have shown the benefits of soybean complementation to rice-based diet.