

Thesis Title Essential fatty acid status in patients with
 liver cirrhosis

Name Panida Sennun

Degree Master of Science (Nutrition)

Thesis Supervisory Committee

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

 Ratana Pakpeankitvatana, D.Sc.

 Sucha Kurathong, M.D., D.T.M. & H.

Date of Graduation 23 July B.E. 2533 (1990)

ABSTRACT

The objective of this study was to investigate the essential fatty acid (EFA) status in 16 patients with liver cirrhosis. Their ages ranged from 40-68 yrs and were randomly divided into 2 groups. All of them participated in a 4-wk metabolic study, wks 1-3 at Clinical Research Ward, Ramathibodi Hospital and wk 4 at home. All of them received 150 g of Aminoleban EN (a soft powder nutrient-mixture containing high content of BCAA) providing 40 g protein, 10.5 g fat, and 630 kcal, together with the conventional liver diet providing 40 g of protein and 1500 kcal daily during wks 1, 2, and 4 for group A and during wks 2-4 for group B. For group A, during wk 3 they received the conventional liver diet providing 80 g protein and 2130 kcal. For group B, during wk 1 they received the conventional liver diet providing 40 g protein and 2130 kcal. Only soybean oil was used for

cooking in the aforesaid conventional liver diets and contributed 20 % of dietary energy. The results indicate that both groups of patients at wk 0 had significant lower 20:3 n-6, 20:4 n-6, and 20:0 of total serum lipids than healthy men whereas opposite results were observed for serum 14:0, 16:1 n-7, and 18:1 n-9. They also had significantly lower 20:4 n-6 and 20:0 but significant higher 18:1 n-9, 16:1 n-7, 14:0, and 16:0 in total erythrocyte lipids. The linoleate intakes in both groups during the study were adequate: 6.4-8.3 % of total energy intake. Their linoleate and arachidonate intakes influenced these two EFAs levels in serum and erythrocyte total lipids evidenced by the significant positive correlations between their linoleate and arachidonate intakes and the two EFAs' levels in serum and/or erythrocyte total lipids. Their 20:3 n-9/ 20:4 n-9 ratio of less than 0.2 reflects that they were in the state of biochemical arachidonate depletion. The changes in serum arachidonate level also determined its content in erythrocyte evidenced by the significant positive correlation between arachidonate levels in serum and erythrocyte total lipids. Though their alpha-linolenate intakes were adequate: 0.74-1.10 % of total energy intake they exhibited biochemical depletion of 20:5 n-3, 22:5 n-3, and 22:6 n-3 evidenced by their lower composition of these n-3 fatty acids in serum and erythrocyte total lipids than healthy subjects. The

decrease in PUFA derivatives of linoleic and alpha-linolenic acids may be due to both deficient $\Delta 6$ desaturase and C18-C20 elongase activities. Our clinical observation revealed that the patients could tolerate the diets prescribed evidenced by their actual intakes were closed to the assigned levels. Hematological and biochemical assessment did not find any deterioration of their hematological, hepatic, and renal functions.