

Thesis Title Alteration of Fat Metabolism in Insulin-
 Requiring Patients after Long-term Intake of
 Different Glycemic Diets

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Abstract

The study was designed to evaluate the effect of consumption of various glycemic diets on lipid status in nine female and one male insulin-requiring type II diabetic patients, aged 50-73 yrs, with hyperlipidemia.

All patients participated in a 12 week study. Throughout the study they consumed 3 isocaloric diets, each diet lasted for 4 weeks. The energy distribution of each diets was 58% CHO, 30% fat and 12% protein. The CHO consisted of 40% complex CHO and 18% other sources. Ten percent of the fat intake came from structural fat which remained constant throughout the study. Twenty percent of the fat intake were derived from soy-bean oil. The only difference of these 3 diets was the type of complex CHO which created different glycemic responses. They were high glycemic (HG), intermediate glycemic (DM) and low glycemic (LG) diets. DM diet consisted of intermediate glycemic CHO, solely from rice, equal to 40% of total calories whereas HG diet consisted mainly of glutinous rice and minimal white rice equal to 35 and 5%, respectively. LG diet consisted mainly from mungbean noodle (transparent vermicelli) and minimal amount of rice equivalent to

35 and 5% of total calories as well.

Comparing to the baseline period, consumption of all the test diets resulted in the reduction of serum TC of 10, 3 and 7% during DM HG and LG, respectively. Serum TG level during DM, HG and LG diets, reduced about 25, 29 and 36 mg/dl as compared to BL respectively. The level of HDL-c was highest during LG. The level of LDL-c decreased about 14, 4 and 7% in DM, HG and LG, respectively, when compared with BL. TC/HDL-c ratio as well as LDL/HDL-c ratio were high during BL and decreased during all test meals. Linoleate levels in both serum and erythrocyte lipids which had been low during BL diet became normal during DM, HG and LG diets. The same findings were seen with the level of α -linolenate in erythrocyte lipids. These data indicated that subjects complied with the study diets in term of soy-bean oil intake. In addition, the level of serum arachidonate during test diets was significantly lower than BL whereas there was no change this fatty acid in erythrocyte lipids and was in normal range. The high linolenate content and the low content of its transformation products, arachidonate, could be due to impaired desaturation of linoleate in diabetic patients. However, there was no striking change in the fatty acid patterns during all test diet study. Therefore, these data support that DM diet is appropriate for dietary management in insulin-requiring diabetic patients as well as LG diet because they maintain the adequacy of linoleate and alpha-linolenate status couple with the low TC, TG, LDL-c and decrease in TC/HDL-c and LDL-c/HDL-c ratios.

This study indicates that good dietary management and appropriate CHO selection are important for good control of insulin-requiring diabetic patients with hyperlipidemia.