Thesis Title Effect of various vegetable oil intake on lipid status

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ABSTRACT

This metabolic effects of 4 vegetable oil intake on lipid status were studied in 8 normolipidemic healthy men with the age of 30-36 yr and BMI of 20 kg/m^2 and above at Clinical Research Ward, Ramathibodi Hospital. They consumed 4 isocaloric diets each for 3 weeks. The energy distribution of each diet was 15% protein, 30% fat and 55% carbohydrate. One-third of the fat intake came from structural fat which remained constant throughout the study. Two-thirds of the fat intake were derived from either soybean oil (SB), cottonseed oil (CS), rice bran oil (RB), or palm oil (PO). The only difference of these 4 diets were the amounts of individual fatty acid intake, especially linoleic (18:2 n-6), alpha-linolenic (18:3 n-3), oleic (18:1 n-9) and palmitic (16:0) aicds.

The linoleate intake during the SB, CS, RB, and PO were 11.2, 11.0, 7.6 and 3.3% of total calories while the oleate and palmitate intake were 8.8 and 3.9% during the SB period, 7.0 and 7.0% during the CS period, 11.8 and 5.4% during the RB period, and 11.9 and 9.5% during the PO period. These fatty acid intake together with the ratio of linoleate: oleate intake correlated with its levels in the serum. These indicate the adherence of our subjects to the diets employed in our study. Linoleate status in our subjects were adequate throughout the study. However, during the SB and CS periods they had the highest serum linoleate levels. During consuming the 4 diets, the subjects had a daily cholesterol intakes of 925 mg. Serum total cholesterol and LDL-c levels decreased by an average of 10.1 and 15.5% for SB, 7.4 and 12.0% for CS, 14.4 and 20.8% for RB, and 1.3 and 0% for PO. Regarding to alpha-linolenic acid, the subjects had the highest serum alpha-linolenic acid during consuming SB. Thus it seems that SB is the most appropriate vegetable oil to maintain the adequacy of linoleate and alpha-linolenate status with concomitant decrease in serum total cholesterol and LDL-c levels among the 4 tested vegetable oils.