A Physiological Function of the Saturated Fat and Phospholipid

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＜Abstract＞

Conventionally, the intake of lipid such as saturated fatty acid, the trans fatty acid and the cholesterol has been recognized to let serum cholesterol values increase. By this cholesterol hypothesis, the saturated fatty acid causes atherosclerosis and lets this becomes the cause and develop a cardiovascular disease. Because, change in dietary saturate fat ingestion is correlated with change in mass of lipoprotein in man.

The influence on serum cholesterol value of the saturated fatty acid is not equal and is different by the number of the carbon. Especially, the stearic acid does not affect in serum cholesterol value.

The effect that saturated fatty acid gives serum cholesterol value is affected by quantity and the composition of the nutrient to take in at the same time. Existence of the phospholipid which is blood transporter of the lipid particularly is important. There are an endogenous cholesterol and an exogenous cholesterol in internal cholesterol, and there is the individual difference that is remarkable in degree of the uptake to the small intestine of the exogenous cholesterol from the outside the body.

The phosphatidylcholine (PC) which is a kind of the phospholipid including the saturated fatty acid is different in an effect to give lipid metabolism in the different fatty acid composition. We compared a difference of the influence on lipid metabolism of the roe PC with an egg yolk PC. The analysis item measured total white adipose tissue weight, serum triacylglycerol value, serum total cholesterol value, hepatic weight, hepatic triacylglycerol value, hepatic cholesterol value, and hepatic fatty acid metabolism-related enzyme activity. The roe PC (n-3 series PUFA) decreased enzyme activity, genetic expression, a transcriptional factors in the lipid synthesis system and increased them in the lipolysis system.

Animal fats are relatively safe and this intake is recommended within a line that does not introduced to surplus nourishment. There is the danger that leads wrong recognition because the flow called the onset of the ingestion of saturated fatty acid → a rise in serum cholesterol → progress of atherosclerosis → pathopoiesis of cardiovascular disease not consider macronutrient and phospholipid intake in at the same time.