

THE EFFECT OF LONG CHAIN SATURATED FATTY ACIDS(12:0, 14:0, 16:0, 18:0) ON HEPATIC CHOLESTEROL METABOLISM.

개 정 등
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In the first study, plasma and hepatic cholesterol response to dietary cholesterol(0, 0.006, 0.06%, w/w) and saturated fatty acid(SFA) chain length(12:0, 14:0, 16:0, 18:0) were investigated in the Mongolian gerbil. Plasma total-, V+LDL, and HDL-cholesterol levels were not affected by different dietary SFA, although both hepatic free and esterified cholesterol concentrations were affected by SFA chain length. These results indicate that hepatic cholesterol concentration may be more sensitive to SFA chain length than plasma cholesterol concentration. In the second study, we examined the effect of *in vitro* SFA supplementation on Hep G2 cellular esterified cholesterol concentration, LDL uptake, cholesterol esterification activity, media apoB-100 accumulation, and apoB-100-containing lipoprotein composition. Hep G2 cells were incubated for 24hr. with 0.5mM 12:0, 14:0, 16:0, 18:0, and 18:1(FA:BSA molar ratios 1.2-1.9:1) in the absence or presence of LDL. While supplementation of fatty acid alone did not significantly affect cellular total, free, and esterified cholesterol concentrations among treatment groups, supplementation of 12:0 and 14:0 with LDL increased cellular total and esterified cholesterol concentrations compared to supplementation of control or other fatty acids with LDL. LDL uptake and cholesterol esterification activity did not explain the increased level of cellular esterified cholesterol by 12:0 and 14:0 treatment with LDL. The accumulation of apoB-100 was not correlated with cellular esterified cholesterol concentration. However, the ratio of secreted, newly synthesized cholesteryl ester:apoB-100 was increased by 12:0 treatment. These results suggest that 12:0 may alter lipoprotein cholesterol composition.

hepatic
0.2%
plasma of
0.1
0.2

BSA w f.a → cell m₂ → m₂ m₂

Keys et al. (1964) 12:0 = 14:0 = 16:0

Negsted et al. (1964) 14:0 > 16:0 > 12:0

Sundram et al. (1984) Keys et al. (1964)
 12:0 + 14:0 > 16:0 (palm oil)
 (cocoand + palm kernel oil)

ZOCK et al. (1984) 14:0 > 16:0 (Synthetic fat)