P-4

ENTERAL INFUSION OF GLUCOSE OR ALANINE PLUS GLYCINE, BUT NOT GLUTAMINE, INCREASES THE LYMPHATIC ABSORPTION OF ^{14}C-TRIOLEIN AND α-TOCOPHEROL (αTP). THE INCREASE IS ASSOCIATED WITH A RISE IN LYMPHATIC GLUCOSE OUTPUT.

E.S. Kim*, S.K. Noh, H.J. Chung, and S.I. Koo.

*Dept. of Food science and Nutr., Doonkook Univ., Seoul 140-714, Korea

Dept. of Food and Nutr., Kansas State Univ., Manhattan, KS 66506, USA.

The efficacies of enteral glucose (GLU), glutamine (GLN), and alanine plus glycine (A+G) in improving intestinal lipid absorption and the relationships between lymph glucose and lipid outputs were compared in male rats. After lymph duct cannulation, rats were infused via a duodenal catheter with a PBS buffer (pH 6.4) containing GLU (138.7 mM), GLN (171.1 mM), or alanine (171.1 mM) plus glycine (171.1 mM) at 3.0 ml/h for 48 h. Each rat was then infused at 3.0 ml/h for 8 h with lipids (565 μmol ^{14}C-labeled triolein, 3.6 μmol αTP, and 396 μmol Na-taurocholate/24 ml) emulsified into one of the respective solutions above. The lymphatic outputs of ^{14}C, αTP, phospholipid (PL), and glucose were measured hourly. The total ^{14}C-lipid absorptions (% dose) for 8 h were 46.6% with GLU, 38.0% with GLN, 47.3% with A+G, and 39.8% with PBS only. GLU or A+G infusion increased the absorption of ^{14}C compared with GLN and PBS only. The absorption of αTP also was improved similarly with GLU and A+G infusion. Lymph glucose outputs were increased in parallel with the amounts of ^{14}C or αTP appearing in the lymph. The total outputs of glucose with GLU, GLN, and A+G infusion were 164, 126, and 176 μmol/ 8 h, respectively. When PBS without lipids was infused, glucose output was reduced to 71.1 μmol/ 8 h. GLN or A+G increased the lymphatic output of PL (35.5 μmol/ 8 h) compared with GLU (29.1 μmol) and with PBS only (29.0 μmol). The finding shows that enteral GLU and certain glucogenic amino acids improve fat absorption. Whether dietary or endogenous glucose serves as a regulatory signal for lipid absorption remains to be understood. (Supported in part by KAES).