tion with riboflavin deficiency. Therefore, EMA might be used as a parameter for following acyl-CoA DH activities through AN refeeding.

METABOLIC EFFECTS OF UNSATURATED FATTY ACIDS

Effects of a high protein diet on food intake and some aspects of gut and liver nitrogen metabolism. C. Jean, G. Fromentin, J.-F. Huneau, V. Mathe, D. Tome (Unité Inra de nutrition humaine et de physiologie intestinale, Institut national agronomique de Paris-Grignon, 16, rue Claude Bernard, 75231 Paris cedex 05, France).

The consequences of feeding a high protein diet for several weeks have not been studied much. This study was designed to characterize the mechanisms of adaptation to a high protein diet in the intestine and the liver (transport and intracellular metabolism).

Materials and methods: Two groups of male Wistar rats were fed two protein diets (20 and 50 % casein) for 3 weeks. Liver cells were isolated using collagenase dissociation and amino acid transport was measured after adherence to plastic dishes. Brush-border membrane vesicles were prepared to measure the amino-acid transport rate in the small intestine.

Results: Feeding a 50 % casein diet resulted in a significant reduction in both food intake (–7 %) and growth rate (–20 %). Amino acid transport rate through system B^0 and $X_{A,G-}$ in the gut and system ASC in the liver were unaffected by the diet. In contrast, system A and $X_{A,G-}$ activities were increased in the liver of rats fed the high protein diet. An increase in liver alanine aminotransferase, arginase, serine-threonine dehydratase activities was also observed in rats fed the 50 % casein diet, indicating that transaminations, ureogenesis and gluconeogenesis were increased by the high protein diet.

Conclusion: A high protein diet induces amino acid transport and metabolism adaptations in the liver. However, these changes appear to be insufficient to restore normal food intake and growth rate over the study period.

The effets of including soy protein concentrate in diets fed to rainbow trout on the activities of trans-deaminating enzymes. M. Mambrini[a], C. Vachot[b], S.J. Kaushik[b] ([a]Laboratoire de génétique des poissons, Inra, 78352 Jouy-en-Josas Cedex; [b]Laboratoire de nutrition des poissons, Inra, 64 310 St-Pée-sur-Nivelle, France).

In fish the importance of amino acid oxidation for energetic purposes – mainly due to trans-deamination reactions – explains their large dependence on dietary proteins. As part of a programme undertaken to measure the consequences of including soy protein concentrate (SPC) in diets fed to rainbow trout, we measured the activities of alanine amino transferase (AAT) and glutamate dehydrogenase (GDH) in the liver. Fish were fed for 3 months (mean final body weight 368 g), with six isonitrogenous diets where fish meal was progressively replaced by SPC, supplemented or not with DL-methionine. The liver was then sampled after fish were fasted for 48 h for the enzymatic assays.

GDH and AAT activities increased with the incorporation level of SPC, and those variations were not explained by any modification of glutamate intake. A negative linear relationship existed between GDH activity and whole body protein retention for the diets which were not deficient in DL-methionine ($R = -0.995$). These results are in agreement