Effects of a high protein diet on food intake and some aspects of gut and liver nitrogen metabolism
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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. Fro- 
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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 intra- 
cellular 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 dis-
sociation and amino acid transport was 
measured after adherence to plastic dishes. 
Brush-border membrane vesicles were 
prepared to measure the amino-acid trans-
port 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 BO and XA, in the gut 
and system ASC in the liver were unaf-
fected by the diet. In contrast, system A 
and XA,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 transam-
inations, ureogenesis and gluconeogenesis 
were increased by the high protein diet.

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

The effects of including soy protein con-
centrate in diets fed to rainbow trout 
on the activities of trans-deaminating 
enzymes. M. Mambrinia\textsuperscript{a}, C. Vachot\textsuperscript{b}, S.J. 
Kaushik\textsuperscript{b} (\textsuperscript{a}Laboratoire de génétique des 
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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 under-
taken 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-methion-
ine. 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