Effects in the rat of gestation and lactation on the cytosolic intestinal and liver fatty acid binding proteins (I and L-FABPc) in the small intestine. F Giroux, A Mallordy, P Besnard, C Berges, H Carlier *(ENSBANA, Université de Bourgogne, Laboratoire de Physiologie de la Nutrition, Campus Universitaire, 1 Esplanade Erasme, 21000 Dijon, France)*

Different studies suggest that very high fat diets containing between 30–45% of lipids induce a slight enhancement of fatty acid binding protein (FABPc) expression in the small intestine (Bass, 1988). Using the same approach, we have recently shown that this regulation occurred at a pre-translational level for I-FABPc (Besnard *et al,* 1991). However, these extreme nutritional conditions raise the question of the physiological relevance of these data.

Gestation and lactation are natural situations where a physiological increase of nutritional needs in general and lipidic needs in particular occurs. This phenomenon is more marked in species with large litters. We therefore studied the effects of these 2 physiological situations on FABPc expression in the small intestine of the rat.

I- and L-FABPC mRNA levels were studied in the duodenum, jejunum and ileum by Northern blot and compared to those in virgin females of the same age. cDNA probes were extracted from recombinant plasmids pJG19 (Alpers *et al,* 1984) and pJG418 (Gordon *et al,* 1983) generously provided by JI Gordon (Washington University, St Louis, MO, USA). The I-FABPc specific probe is a 442 base pairs (bp) DNA fragment recovered from *Pvu*II/*Nhe*I digest of plasmid pJG 19 (Besnard *et al,* 1991). It includes the full coding sequence of rat I-FABPc mRNA. The L-FABPC specific probe is a 383-bp *Pvu*II/*Acc*I restriction fragment isolated from pJG418 which encompasses 93% of the coding sequence of rat L-FABPc mRNA.

In females on d 22 of pregnancy, a decrease in messengers coding for the I- and L-FABPc was observed not only at the duodenal (–60 and –44%, respectively for I- and L-FABPc), but also at the ileal level (–56 and –60%) and to a lesser degree in the jejunum (–30 and –31%).

In lactating females, similar results were also found for I-FABPc mRNA. By contrast, a decrease in L-FABPc mRNA levels was only observed in the ileum.

Our results show that a physiological increase in food intake does not induce an increase in FABPc messengers by contrast to high fat diets. The mechanism by which the I- and L-FABPc mRNA levels respond to pregnancy and lactation is unknown. Possibilities include hormonally-mediated inhibitor effects on the biosynthesis of these binding proteins.

References

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