

**Developmental changes in intestinal fucosylation: regulatory factors.** MC Biol, A Martin, D Ruggiero-Lopez, B Mathian, MC Patricot, I Hugueny, P Louisot (*Faculté de Médecine, Unité INSERM-CNRS U189, Lyon-Sud, 69921 Oullins; Département d'Hormonologie, Hôpital Jules Courmont, 69230 Saint-Genis-Laval, France*)

During postnatal development, some modifications of the different systems involved in intestinal fucosylation are observed at the end of the 3rd week:

- a rise in fucosyl-transferase activities, in mucosal fucose content and in synthesis of the substrate GDP-fucose;
- a decrease in GDP-fucose degradation by pyrophosphatases and in the activity of proteinic endogenous inhibitor of the fucosyl-transferase.

Many physiological regulatory factors could be evoked to explain these changes. Two factors were studied: glucocorticoids and modifications in the diet at weaning.

#### *Glucocorticoids*

A rise in corticosterone blood level was observed at the 16th d of life just before the increase in fucosyl-transferase activity.

Before the 16th d, fucosyl-transferase activity was increased by hydrocortisone treatment and

an antiglucocorticoid displayed an antagonist effect. On the contrary, after the 16th d of life, hydrocortisone had no effect on fucosyl-transferase activity. Injections of the antiglucocorticoid did not prevent the normal rise in fucosyl-transferase activity.

Moreover, animals submitted to adrenalectomy at the 15th d of life had a very low corticosterone level as compared to sham-operated animals, but the normal rise in fucosyl-transferase at 20 d was not prevented by the operation.

#### *Effect of dietary modifications at weaning*

The solid diet given to animals at weaning is rich in carbohydrates and poor in lipids as compared to milk. Early weaning induced an early rise in fucosyl-transferase activity, whereas delayed weaning induced a delayed increase in fucosyl-transferase activity. Prolonged nursing maintained the fucosyl-transferase activity at a low level, as for suckling rats; it also prevented the decrease in GDP-fucose degradation and in the activity of the fucosyl-transferase inhibitor.

During postnatal development, a concerted evolution of the different systems involved in intestinal fucosylation processes is observed and results in a significant rise in fucosylation at the weaning period. Glucocorticoids play a minor part in these physiological variations, whereas dietary modifications seem to be an important factor in these variations.