

protein were dramatically reduced in the colonic mucosa of GF vs CV rats (respectively $-55 \pm 6\%$, and $-66 \pm 2\%$, $P < 0.05$). Moreover, these changes were reversible, as mRNA and protein concentrations were restored in the colonic mucosa of IN rats.

In conclusion, there is a site-specific expression of mitochondrial HMG-CoA synthase in the intestinal mucosa of the adult rat. As opposed to what happens in the liver, its expression is not greatly affected by starvation vs feeding. In contrast, the large intestinal flora, through mechanisms which deserve further investigation, is a major factor controlling the enzyme.

Influence of dietary proteins on colonic cell proliferation and luminal polyamine metabolism. K Meziani, R Benamouzig, D Tomé (*Inra, UNHPI, 75006 Paris, France*).

Polyamines play an important role in DNA, RNA and protein synthesis. The current study was designed to investigate the influence of the quality of dietary proteins on luminal intestinal polyamine concentrations and their possible role in colonic cell proliferation.

Three groups of eight male Wistar rats were fed high protein diets (50% of either casein, zein or soy protein). After 4 weeks of feeding, both intestinal contents and colonic mucosa were recovered. Polyamines were assayed by HPLC and ornithine decarboxylase (ODC) activity was measured by the release of $^{14}\text{CO}_2$ from 14C-L-ornithine.

Rats fed zein showed a 3-fold increase in mucosal colonic ODC activity compared to the other groups (31 ± 11 , 11 ± 4 and $10 \pm 2 \mu\text{mol/h/mg}$ proteins for zein, casein and soy protein groups, respectively $P < 0.05$). Luminal colonic putrescine and cadaverine levels were also higher in the group fed zein (putrescine: 14 ± 6 , 3 ± 1 and $0.6 \pm 0.3 \mu\text{mol/g DM}$; cadaverine: 23 ± 11 , 0.6 ± 0.1 and $0.2 \pm 0.09 \mu\text{mol/g DM}$ for zein,

casein and soy protein groups, respectively $P < 0.05$). Furthermore, a high amount of polyamines were found in the jejunum and the ileum of rats receiving a soy protein diet, probably due to the higher level of polyamines in this diet. The difference of the true digestibility of dietary arginine (95% for soy protein, 93% for casein and 42% for zein), a precursor of polyamines, could explain these observations.

In conclusion, mucosal colonic ODC activity is influenced by dietary protein quality. Zein is associated with a higher colonic ODC activity. This modulation could be influenced by modifications in luminal polyamine concentrations.

Uptake of α -linolenic acid in human enterocyte-like Caco-2 cells. T Tranchant¹, P Besson², C Hoinard², J Delarue¹, C Couet¹, J Goré² (¹ *Laboratoire de nutrition, Faculté de médecine*; ² *Laboratoire de physiologie et biophysique cellulaire, Faculté de pharmacie, Université de Tours, 37000 Tours, France*).

The uptake kinetics of α -linolenic acid were investigated in the human intestinal cell line Caco-2. Four clones (PD10, PF11, PD7 and TC7) from the parental Caco-2 cells population were used. The TC7 clone was selected for the study of α -linolenic acid uptake. [$1\text{-}^{14}\text{C}$]linolenic acid dissolved in taurocholate was presented to the microvillus plasma membrane of differentiated TC7 cells. The initial rate of uptake is not a linear function of the α -linolenic monomer concentration in the incubation medium. In the monomer concentration range studied (0.2 to $36 \mu\text{M}$) apical uptake was saturable and followed Michaelis-Menten kinetics ($V_m = 15.4 \pm 0.6 \text{ nmol/mg protein/min}$, $K_m = 14.3 \pm 1.3 \mu\text{M}$). In addition, it was temperature and energy-dependent but was apparently unaffected by the sodium gradient. Excess of unlabeled long chain fatty acids led to a 27–68% reduction of [$1\text{-}^{14}\text{C}$]linolenic acid