groups S-U, L-U, S-R and L-R, respectively), whereas the cyclophilin signal remained unchanged. Our results suggest that both photoperiod (at a given food intake) and nutritional status regulate the expression of the gene encoding leptin in ovine adipose tissue, at least in part through pretranslational mechanisms.

Nutritional regulation of lipoprotein lipase activity and its messenger RNAs in ewe adipose tissue and heart. M. Bonnet[a], J.F. Hocquette[b], Y. Faulconnier[a], J. Fléchet[a], F. Bocquier[a], Y. Chilliard[a] ([a]Laboratoire sous-nutrition des ruminants; [b]Laboratoire croissance et métabolismes des herbivores, Inra, 63122 Saint-Genès-Champanelle, France).

The regulation of circulating triacylglycerol (TG) uptake by adipose tissue (AT) or by muscle is a part of an animal's adaptation to fluctuations in their nutritional or physiological status. It was thus interesting to obtain a better knowledge of the factors involved in TG partitioning between these two tissues. This is regulated, at least partly, by the lipoprotein lipase (LPL) activity. LPL activity and the levels of its mRNAs were assayed in perirenal AT and cardiac muscle (CM) of ten adult, dry and non-pregnant ewes. All animals were restricted to 25 % of their maintenance energy requirement (MER) for 7 days, then half of them ($n = 5$) were refed to 200 % MER for 14 days before slaughter. Refeeding increased the LPL activity (expressed per gram of tissue) in both AT (+357 %; $P < 0.001$) and CM (+45 %; $P < 0.05$). Similar trends were observed when the LPL activity was expressed either by whole tissue or by cell. Thus, contrary to previous observations in the rat, refeeding regulated ovine CM LPL activity in the same way as AT LPL activity, although with a smaller effect than in CM. Moreover, northern-blot analyses using an ovine LPL cDNA revealed an increase in LPL mRNA levels after refeeding, both in AT (lack of signals for all the restricted ewes versus strong signals for all the refed ewes) and CM (+140 %; $P < 0.02$). In conclusion, nutritional regulation of LPL gene expression seems to be carried out in the same way in ewe perirenal AT and CM, and, at least partly, by pretranslational mechanisms. The different regulation of CM LPL between ewes and rats probably arises from the peculiarities of nutrient digestion and absorption, and liver lipogenesis, in ruminant species.

Effects of the infusion of β-, β2- or β3-adrenergic agonists or epinephrine on in situ lipolysis in ewe subcutaneous adipose tissue. A. Ferlay[a], C. Charret[a], J. Galitzky[b], M. Berlan[b], Y. Chilliard[a] ([a]Laboratoire sous-nutrition des ruminants, Inra, 63122 Saint-Genès-Champanelle; [b]Inserm U317, Faculté de médecine, Toulouse, France).

An in vivo study of lipolysis is puzzling because changes in plasma glycerol concentrations depend both on the lipolytic activity of adipose tissues and on its utilization by non-adipose tissues. The microdialysis technique makes it possible to study in situ the regulation of lipolysis, which has been rarely investigated in ruminants. Twelve Lacaune ewes (body weight 78 kg and body condition score 3.9 on a 0–5 scale) were underfed at 60 % of their energy requirement for maintenance for 4 days, before the insertion of four probes (Carnegie, 0.5 × 20 mm) in the rump subcutaneous adipose tissue of each animal. The probes were perfused at 5 µL/min for 120 min with 3 β-adrenergic (β-A) agonists: isoproterenol (ISO, non-selective β-A), terbutaline (TER, β2-A), CL316243 (β3-A, Wyeth-Ayerst, USA) or epinephrine (EPI) at 10^{-6}, 10^{-5} and 10^{-4}