PV, en 1 min). Le sang est prélevé avant l'injection (t_0), puis 2, 6, 10, 14, 18, 22, 29, 45, 87 min après t_0, pour déterminer le glucose (GLU), l'insuline (INS), le β-hydroxybutyrate (BHB) et les acides gras non estérifiés (AGNE).

Après l'injection, GLU augmente fortement jusqu'à un maximum (GLUmax) atteint 15 min environ après t_0, puis décroît ensuite lentement jusquà t_{87}, mais demeure plus élevé qu'à t_0, de 30% environ, ($GLUt_0$ = 3,0 ; 3,2 ; 3,0 ; 3,2 mM et GLUmax = 8,2 ; 7,8 ; 8,4 ; 7,5 mM, pour RB, RH, PB et PH). Il n'y a pas de différence entre R et P pour $GLUt_0$ et GLUmax. Les chèvres B présentent une valeur de t_0 plus basse, un GLUmax, un accroissement de GLU, et un délai pour atteindre GLUmax, plus élevés que chez les chèvres H ($P < 0,05$; P : NS, $P = 0,06$, et $P < 0,05$, respectivement). Le taux d'insuline croît fortement de t_0 jusqu'à un maximum situé vers 12 min après t_0 puis revient aux valeurs basales à t_{87} ($INST_0$ = 8, 10, 3, 9 mU et INSmax = 48, 64, 51, 63 mU pour RB, RH, PB et PH, respectivement ; P lots : NS). Le PR provoque, sitôt l'injection, une baisse des AGNE et du BHB, de même amplitude relative mais plus tardive et plus durable pour le BHB.

Ces résultats indiquent que la nature de l'aliment concentré de la ration n'aurait pas, en pleine lactation, d'influence sur la gluconéogenèse apparente à partir de PR, alors qu'un niveau restreint d'apport d'énergie pourrait la favoriser ou avoir un effet moindre sur l'utilisation du glucose produit en raison d'une plus faible activité insulinique.

In vitro measurement of glucose-transport rate in muscle from preruminant or weaned calves and from normal or double-muscled calves. F Bornes [1], JF Hocquette [1], D Dardevet [2], M Vermorel [1], Y Geay [1], P Férré [3] *([1] INRA-Theix, Laboratoire Croissance et Métabolismes des Herbivores; [2] Laboratoire d'Étude du Métabolisme Azoté, 63122 Saint-Genès-Champanelle; [3] INSERM U342, hôpital Saint-Vincent-de-Paul, 75014 Paris, France)*

Glucose is an important energy-yielding substrate for muscle in both monogastrics and ruminants. Glucose transport across the cell membrane is a rate-limiting step for glucose utilization, and this step is acutely regulated by insulin. The aim of this work was to study nutritional and genetic regulation of glucose transport in bovine muscle.

We adapted an *in vitro* method for the measurement of the glucose-transport rate (GTR) developed for rat and human metabolic studies to the bovine muscle *rectus abdominis*. GTR was measured using 2-deoxyglucose (DOG) in muscle fiber strips, which were isolated, incubated and kept viable for 90 min. GTR were 300-400 and 500-720 nmol DOG/20 min•g wet tissue in basal conditions and after stimulation by insulin (10^{-6} M), respectively.

A first experiment was conducted on 2 groups of 7 preruminant or weaned Montbéliard calves. Calves of the second group were weaned onto a low starch diet at the age of 118 d. Net energy intake from birth onwards, age (170 d), empty body weight (194 kg) and blood parameters at slaughter were similar for the 2 groups so that only the effect of change in energy-yielding substrates was studied. Basal and insulin-stimulated GTR were higher in weaned calves than in preruminant calves (+31% and +43% respectively; $P < 0.01$). Insulin stimulation of GTR was also higher in weaned calves (+305 *vs* +201 nmol DOG/20 min•g tissue; $P < 0.01$). It can be hypothesized that the high fat content (16.8%) and the high lactose content (42%) in the diet of preruminant calves may affect glucose transporter activity.

A second experiment was conducted on 2 groups of 6 normal or double-muscled (DM) Belgian Blue calves fed a low starch diet and slaughtered at 9–11 months of age. DM cattle exhibited muscle hypertrophy and a higher proportion of glycolytic muscle fibers. Basal and insulin-stimulated GTR were not significantly different between normal and DM animals. Half-maximum GTR increase was observed for the same insulin concentration (0.7 nM) in the 2 groups. Results were similar when expressed per mg protein or per µg DNA.

In conclusion, glucose transport in bovine muscle and its acute regulation by insulin may be more affected by nutritional factors than by genetic muscle hypertrophy.

Plasma metabolites in dairy mares related to milk production. V Dell'Orto [1], E Salimei [1], V Bontempo [2], F Fantuz [1], *([1] Ist Alimentazione Animale, Università di Milano;*