

Effect of an Extra Energy Supplement Crystalyx® to Grazing Dairy Sheep in Pre-and Post-partum on Metabolic Profile. Preliminary Results

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During the peripartum period, dairy sheep are under physiological stress and are more susceptible to metabolic and infectious diseases (Caroprese *et al* 2006). In particular, the risk of toxemia is high, and it can be increased in case of twin pregnancy. The health status can be improved by adequate feed nutrient supplementation. The aim of this study was to evaluate the effect of the administration of an energy supplement (Crystalyx®) offered *ad libitum* to periparturient dairy sheep on certain blood indices of metabolism and inflammation.

The experiment was carried out at Bonassai research station in NW Sardinia. The details of animals, treatments and experimental design have been previously described by Cabiddu *et al.* in this volume. In brief thirty grazing Sarda dairy sheep were blocked in two homogeneous groups, control (Ctr) and treated (Cry), and each one was split into three replicates. The groups were allotted for 6h/d to plots of Italian ryegrass, rotationally grazed for 7 d, with 21 d of regrowth.

Crystalyx intake averaged 97 g/ewe/day during the experimental period, whereas total DM intake was similar between treatment groups. Some blood indices of energy and protein metabolism (glucose, NEFA, OH-butyrate, urea and creatinine) showed marked changes around the lambing period, without statistical effects attributable to treatment, likewise haptoglobin, one of the most important acute markers of inflammation. Conversely, Cry vs Ctr group showed an increase of plasma cholesterol (Figure 1), triglycerides and GGT (Figure 2) for the whole experimental period ($P < 0.01$). Cry also showed a tendency for higher concentrations of paraoxonase (+14%; $P > 0.13$). Despite both groups showing a similar level of lipomobilization, Cry had better health status, higher milk yield and growth rate of suckling lambs than Ctr despite the higher twinning rate. These results are partly explained by better inflammatory conditions (*e.g.* lower ceruloplasmin and higher cholesterol and paraoxonase, markers of positive and negative acute phase reactants respectively) and a moderate oxidative stress (lower ROM and higher antioxidant concentrations) in comparison to Ctr group after lambing. Plasma ceruloplasmin concentration is negatively related to milk yield ($r^2=0.27$; $P < 0.01$), with a higher slope value (0.0014 vs 0.0007; ns for Ctr and Cry group respectively) which suggests a probably more severe inflammatory response in Ctr sheep. Likely due to higher twinning rate (+20%; $P < 0.01$), Cry group showed an increase of plasma GGT (+20%; $P < 0.01$), without any increase in liver damage. Indeed, the quicker rise of plasma cholesterol and paraoxonase after lambing in Cry sheep vs Ctr confirms the good liver functionality.

The inclusion of Cry in the diet of sheep around lambing has reduced metabolic stress and inflammation in early lactation. These preliminary results suggest that the supplementation of the diet with Crystalyx can improve the metabolic nutritional status of periparturient ewes and supports the utility to pay more attention to the transition phase into lactation, especially for twin-bearing ewes.

Figure 1. Blood Cholesterol during whole period.

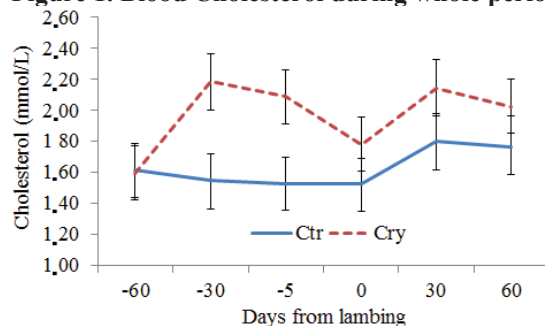
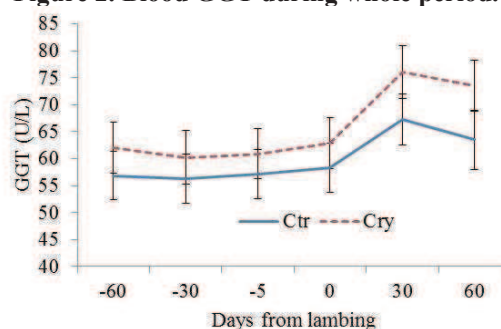


Figure 2. Blood GGT during whole period.



Caroprese M, Albenzio M, Annicchiarico G, and Sevi A, (2006) *J. Dairy Sci.* **89**, 562

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