Relationships of stress during fall corral weaning with future productive performance in beef cattle

L. Braga[1], R. Palme[2], S. Miller[3], M. Sargolzaei[4] and Y. Montanholi[5]
[1]Universidade Estadual Paulista Júlio de Mesquita Filho, Rua Prof. P. Castelane, Jaboticabal, 14884-900, Brazil, [2]Vetmeduni Vienna, Veterinärplatz 1, Vienna, 1210, Austria, [3]University of New England, University of New England 2351, Armidale, 2350, Australia, [4]University of Guelph, 50 Stone Road East, N1G 2W1, Canada, [5]Lakeland College, 5707 College Drive, T9X 1K5, Canada; yuri.r.montanholi@gmail.com

Corral weaning is a popular and stressful husbandry practice in beef cattle operations, which is aggravated by the colder weather observed during late Fall in Canada. There is interest to learn about the individual variation of this response and the relationships with cattle performance over the production cycle. By using faecal cortisol metabolites (FCM, as an indicator of chronic stress during weaning), we monitored 146 crossbred calves (72 heifers, 30 bulls and 44 steers calves) with 4 to 6 months of age. At the weaning, calves were separated from the cowherd and trucked from the pastures to a handling facility. Calves were then weighed, and a rectal faecal grab was collected. Calves were commingled and housed in outdoor adjacent pens in groups of 10 to 12 calves. Three days after weaning calves were re-weighed and another faecal sample was collected. From this point, calves were submitted to their husbandry practice accordingly to each animal type category. Performance records were monitored in each category throughout their production cycle. Least square means comparisons were conducted to compare FCM and body weight at weaning and 72 h. Regression analysis, correlations and PLS will be applied to analyse the relationships with parameters measured around weaning with performance traits over the production cycle. Preliminary results, comparing FCM levels at weaning and 72 h later indicate an increase, from 38.7 to 67.8 ng/g across all the calves. Over this period, calves lost weight, shifting from 258 to 250 kg. Heifers had the highest (40.5 ng/g) increase in FCMs in response to weaning, followed by steers (26.1 ng/g) and bulls (14.9 ng/g). These results indicate that the FCM was sensitive to detect the stress due to weaning. Further analyses are under course to investigate the relationships of FCM with commercial traits in bulls, heifers and, in steers over the production cycle.

Energy balance and feed restriction effects on milk fatty acids and metabolic profile of beef cows

K. Orquera, M. Blanco, J.R. Bertolín, J. Ferrer and I. Casasús
Ctr de Invest y Tecnol Agroal de Aragón (CITA), IA2 (CITA-Universidad de Zaragoza), Montañana 930, 50059 Zaragoza, Spain; korquera@cita-aragon.es

Feeding winter diets at a flat rate is a common practice in beef cattle farms, all cows receiving the same diet irrespectively of individual requirements. This results in cows under a certain range of energy balance (EB), which can respond differently to a perturbation. This study aimed to evaluate the effect of a short feed restriction (4 d) in cows under different EB on milk fatty acid (FA) and the plasma profile. The study, funded by H2020 GenTORE, involved 31 lactating Parda de Montaña beef cows (626±48 kg body weight at calving). With d0 as the first day of restriction (58 days in milk), the cows received a diet that met 100% of the standard cow requirements (d-2 to d-1, Basal period), then 55% (d0 to d3, Restriction period) and then 100% again (d4 to d8, Refeeding period). Milk and blood samples were collected to determine the milk FA and plasma metabolites [glucose, non-esterified FA (NEFA), β-hydroxyburyrate (BHB), urea and malondialdehyde (MDA)]. The cows were clustered according to their previous performance and EB into 2 groups, Balanced (BAL) and Imbalanced (IMB) cows. Data were analysed with a mixed model considering the EB cluster, the period and their interaction. The milk FA were grouped by their origin (de novo, ≤C15; mixed, C16; and mobilization FA, C17). The de novo FA were affected by EB cluster, with greater values in BAL cows, whereas the mobilization FA were greater in IMB cows ($P<0.05$). During the Restriction, mobilization FA increased and de novo and mixed FA decreased ($P<0.001$), with opposite results in the Refeeding. Regarding the metabolic profile, only urea was affected by EB cluster, with greater content in IMB cows ($P=0.03$). NEFA increased in the Restriction; glucose increased and urea decreased in the Refeeding ($P<0.001$), with no clear differences in BHB and MDA ($P\geq0.10$). There was a moderate correlation between the individual EB and de novo, mixed and mobilization milk FA ($r=0.68$, 0.60 and -0.71, $P<0.001$) and between NEFA and de novo and mobilization milk FA ($r=-0.60$ and 0.53, $P<0.001$). Milk FA and NEFA were quick-responding indicators of energy status in beef cows under feed restriction and refeeding periods.

Book of Abstracts of the 72nd Annual Meeting of the European Federation of Animal Science

Davos, Switzerland, 30th August – 3rd September, 2021

EAAP Scientific Committee:

E. Strandberg
L. Pinotti
S. Messori
D. Kenny
M. Lee
J.F. Hocquette
V.A.P. Cadavez
S. Millet
R. Evans
T. Veldkamp
M. Pastell
G. Pollott