

Passive transfer of dam immunoglobulins to calf in two beef breeds undernourished in early pregnancy

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Poor nutrient diet in early pregnancy, a common scenario in extensive systems, could interfere with the correct foetal programming and the colostrum yield in the dam. The accurate colostrum intake plays an essential role to acquire passive immunity by the agammaglobulinemic newborn. The aim of this study was to evaluate the effects of maternal undernutrition in first third of gestation on immunoglobulin G and M (IgG and IgM) concentration of dams (plasma and colostrum) and their offspring (plasma) in two beef breeds. Thirty one Parda de Montaña (PA) and 21 Pirenaica (PI) multiparous cows were artificially inseminated and randomly allocated to a control (Control, n=19) or nutrient-restricted (Subnut, n=33) group, which were fed at 100 or 65% of their estimated energy requirements during the first 82 days of pregnancy, and thereafter received a control 100% diet until parturition. Plasma IgG concentration in dams decreased from 8th month of gestation to parturition in all groups, but not significantly in PI-Control. All groups showed similar plasma IgM levels, regardless breed or maternal subnutrition, both at 8th month of gestation and at parturition. Both colostrum IgG and IgM values strongly fell down from period 1 (0-12 hours postcalving) to period 2 (12-24 hours postcalving). Although no Ig concentration differences among groups were registered in colostrum samples in period 1, PI-Control presented higher IgG concentrations than their counterparts in period 2. Neither breed nor maternal nutritional treatment caused differences in calf Ig concentrations. These results would confirm the correct passive transfer of dam immunoglobulins throughout colostrum regardless maternal undernutrition in early gestation, although a breed-nutritional treatment effect could diminish the physiological IgG depletion in late gestation and maintain high colostrum IgG values over time in PI breed.

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