



PW1314 - Under-nutrition during early pregnancy affects peripheral white blood cell kinetics in two beef cattle breeds during peri-implantation period

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Pregnancy recognition in ruminants is characterized by transient changes in the maternal immune system, also evident at peripheral level [1]. The objective of this study was to evaluate the effect of nutrient restriction on peripheral white blood cell (WBC) counts in beef pregnant dams during peri-implantation period. Fifty-two Parda de Montaña (PA) and 34 Pirenaica (PI) multiparous cows were synchronized to estrus and artificially inseminated (AI). Pregnancy was confirmed by transrectal ultrasonography on Day 37 post-AI. Dams were



randomly allocated to a control group (n= 38) or a nutrient-restricted group (n=48) which consumed the equivalent to 100% or 63% of predicted requirements, respectively, during the first twelve weeks of pregnancy. Blood samples were collected on Days 18 and 21 post-AI for haematological analysis. The effects of day of pregnancy, breed of dams and maternal nutrient restriction and possible interactions of paired factors on WBC counts were assessed by General Linear Model (GLM) repeated measures ANOVA (SPSS Inc., Chicago, IL., USA). GLM analysis showed that day of pregnancy increased significantly WBC and granulocytes counts (P=0.043; P=0.012, respectively). Interaction between breed and maternal nutrient restriction also affected granulocytes, with increasing counts in control PI dams compared to control PA and nutrient-restricted PA and PI cows (P=0.007). Increased lymphocyte counts were observed in nutrient restricted group (P=0.066, trend) and PA dams (P=0.047) compared to controls and PI dams, respectively. Different sensitivity to stress in these two cattle breeds could explain the differences observed in WBC counts during pregnancy establishment [2]. Moreover, altered leukocyte kinetics in nutrient-restricted dams could be a reflection of the impact of undernutrition on embryo-maternal crosstalk during the early pregnancy. Further studies are needed. To sum up, breed of dams and maternal nutrient restriction affected peripheral WBC in beef cattle during peri-implantation period.

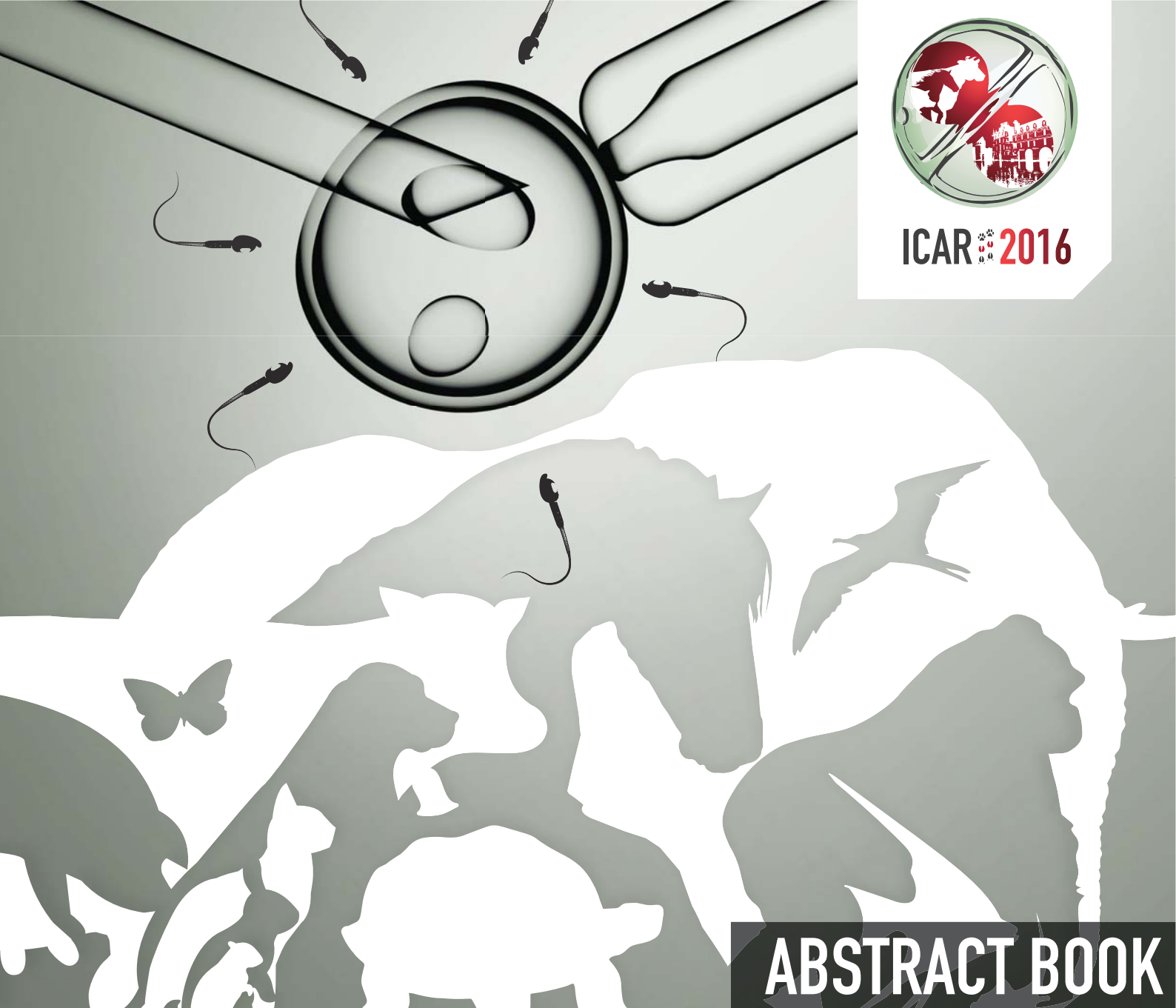
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UNDER-NUTRITION DURING EARLY PREGNANCY AFFECTS PERIPHERAL WHITE BLOOD CELL KINETICS IN TWO BEEF CATTLE BREEDS DURING PERI-IMPLANTATION PERIOD

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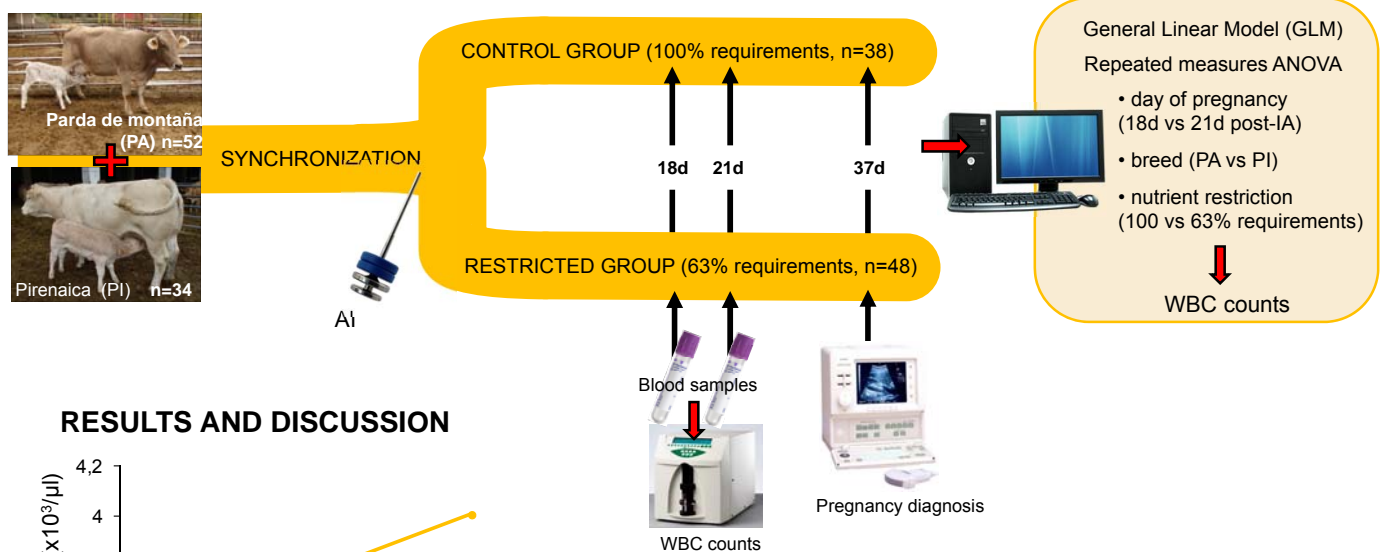
INTRODUCTION

Pregnancy recognition in ruminants is characterized by transient changes in the maternal immune system, also evident at peripheral level.

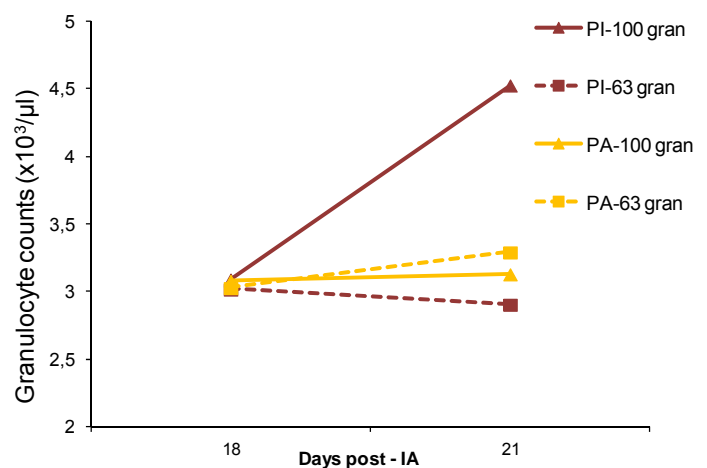
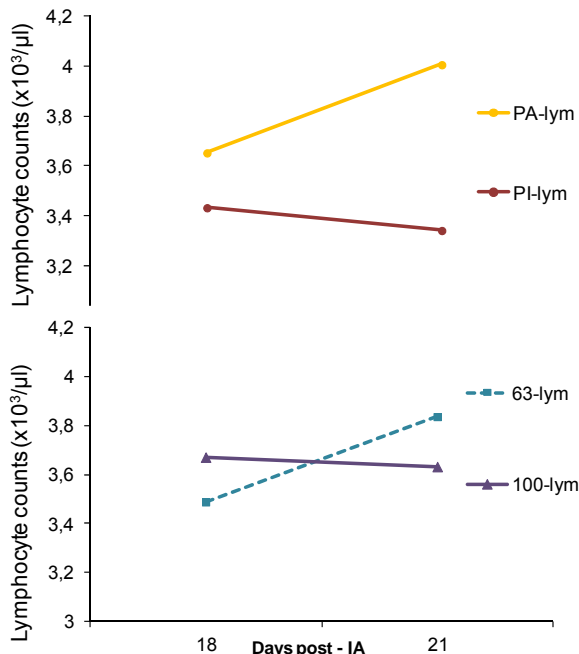
OBJECTIVE

Evaluate the effect of nutrient restriction on peripheral white blood cell (WBC) counts of two different breeds in pregnant dams during the peri-implantation period.

MATERIAL AND METHODS



RESULTS AND DISCUSSION



- Increased lymphocyte counts in PA dams (P=0.047) compared to PI dams, may be due to a different sensitivity to stress during pregnancy establishment
- Increased lymphocyte counts in nutrient restricted group (P=0.066, trend) compared to control

- Interaction between breed of dam and maternal nutrient restriction: increased granulocytes counts in control PI dams compared to control PA and nutrient-restricted dams (P=0.007)

CONCLUSION

Breed of dams and maternal nutrient restriction affected peripheral WBC in beef dams during peri-implantation period