

# EFFECT OF PARITY ON NON-ESTERIFIED FATTY ACIDS AND B-HYDROXYBUTYRATE OF GRAZING NELLORE FEMALES DURING PRE-CALVING AND LACTATION PERIODS

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## RESUMO

Metabolic profile evaluation is a tool widely used in ruminant nutrition as metabolic cues to relate nutrition and physiology. While most of the scientific information regarding metabolic physiology of the transition cow and lactation has been generated in confined or free stall production systems, studies of range cattle under grazing and tropical conditions are scarce. Thirty-six pregnant female cows were used, 12 nulliparous, 12 primiparous and 12 multiparous with an average age, body weight and body condition score: 2 years, 442 ( $\pm 62$ ) kg, 6.20 ( $\pm 0.5$ ); 3 years, 457 ( $\pm 58$ ) kg, 5.68 ( $\pm 0.5$ ); 4-6 years, 505 ( $\pm 60$ ) kg, 5.92 ( $\pm 0.5$ ), respectively. Animals were randomly divided into six paddocks, with 2 females from each category. Paddocks were evenly covered with *Urochloa decumbens* grass, with free access to water and feeders. All cows were group-fed with a 35% supplement (1.0 kg/d) for the 60 pre-partum days (gestation period from 230 to 290-d), accompanied by MM offered ad libitum supplied separately in additional feeders. By taking calving day as day 0, blood samples were collected before feeding on days -21, -14, -7, 0, 7, 14, 21, 42, 63, 91, 154, 119, and 203. Blood samples were collected by jugular vein puncture, using vacuum tubes with a clot activator and gel for serum separation (BD Vacutainer® SST® II Advance®, São Paulo, Brazil) to quantify nonesterified fatty acid (NEFA) and beta-hydroxybutyrate ( $\beta$ HB). After collection, samples were centrifuged at  $2200 \times g$  for 20 min. Serum and plasma were immediately frozen at  $-20^{\circ}\text{C}$  until analyzed. Statistical evaluations were performed considering 0.05 as the critical level of probability for the occurrence of the type I error. The statistical analyses were carried out using the PROC MIXED of SAS 9.4 (Inst. Inc., Cary, NC, USA). Effect of day ( $P < 0.0001$ ), but not parity and, parity and day, were detected for NEFA. NEFA serum concentrations were higher upon calving and its concentrations on days 7, 14, and 21 were lower than the calving day and stabilized after day 42 ( $P < 0.05$ ). An interaction was observed between parity and days for  $\beta$ HB ( $P < 0.020$ ), with the lowest concentrations on -14 and -7 days for nulliparous, higher for multiparous and primiparous than nulliparous at day 7, and higher for primiparous than the other categories at day 21. NEFA and  $\beta$ HB concentrations significantly changed during pre- and post-partum. Therefore, parity only affected  $\beta$  HB concentrations.

**PALAVRAS-CHAVE:** Nutrição e produção de ruminantes, physiology, gestation, metabolic profile

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