



**Section:** Ruminant Nutrition

**Session:** Young Stock

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# T357

**Assessment of bone metabolism in pregnant heifers with high and low residual feed intake.**

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It is known that ruminants with lower residual feed intakes (RFI) use nutrients more efficiently than animals with higher RFI. However, the biological reasons and metabolic consequences underlying the variation in RFI between animals are not clear. There is also no information on whether RFI is related to differences in bone metabolism. Within this context 26 pregnant heifers (13 low RFI + 13 high RFI) in their first trimester of gestation were used for a bone metabolism study. Their blood was sampled once in the morning before feeding through jugular catheterization for analysis of osteocalcin and crosslaps in serum. These compounds are biochemical markers of bone formation and resorption respectively considered important clinical tools for assessment and monitoring of bone metabolism. Both markers were determined quantitatively using an immunoassay kit specifically for bovines. The results showed a lack of difference between animals with high and low RFI in the concentration of osteocalcin in serum with average concentration of  $27 \pm 10.9$  ng/mL similar for both groups ( $P > 0.05$ ), indicating that the efficiency of feed utilization by pregnant heifers does not affect their bone formation. Likewise the concentrations of bovine crosslaps were similar between the 2 groups of animals ( $P > 0.05$ ), though the more efficient animals had a mean concentration of  $16 \pm 10.3$  ng/mL and the group of animals with higher RFI gave a mean concentration of  $8 \pm 7.7$  ng/mL. These findings suggest bone resorption is not affected by feed efficiency in pregnant heifers. Thus, this research provides an indication that bone metabolism is similar for pregnant heifers with lower and higher RFI. However more research is needed to provide further information.

**Key Words:** bone marker, feed efficiency, pregnant heifer

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