

OASES - Abstract: preview

Abstract # 40320

Hydroxychloride trace minerals improve nutrient digestibility in beef cattle compared to inorganics

S. Van Kuijk¹, P. Swiegers², Y. Han¹, D. Brito De Araujo³

¹Trouw Nutrition , Global R&D Department, Stationsstraat 7, 3811 MH, Amersfoort, Utrecht , the Netherlands,

²Rumen-8 (PTY) Ltd., 41 La Provence Road, 9701 Bethlehem, South Africa, ³Nutreco Nederland BV, Global Selko Feed Additives, Stationsstraat 7, 3811 MH, Amersfoort, Utrecht, the Netherlands;

davi.araujo@trouwnutrition.com

The objective of this study was to answer the question “Does the complete substitution of sulfate trace mineral (STM) by hydroxychloride (HTM) sources of Cu, Zn and Mn improve nutrient digestibility in beef cattle diets ”? Eight 12 month-old Bonsmara beef heifers were housed individually and fed according to a duplicated 4 × 4 Latin square design. Two levels of protein supplementation, being 12.8% CP in the low protein concentrate and 30.2% CP in the high protein concentrate, were combined with two sources of trace minerals, being HTM and STM. All four diets contained 15 ppm added Cu, 50 ppm added Zn and 33 ppm added Mn. The Eragrostis tef hay roughage was fed ad libitum. The supplements including the minerals were fed separately daily at a fixed rate of 1.4 kg/h/day. Each period was 24d starting with 18d adaptation period followed by 6d sampling period. The body weight and intake were measured during each period, to calculate performance. Feed and fecal samples were collected during sampling period and analyzed for nutrient digestibility, while acid insoluble ash was used as indigestible marker. On the last day of each period, rumen fluid was collected for rumen pH and volatile fatty acid measurements. Results showed that HTM increased ($P < 0.05$) DM (+1.78%, $P = 0.042$), OM (+1.81%, $P = 0.039$), NDF (+1.80%, $P = 0.020$) and ADF (+2.41%, $P = 0.019$) digestibility in Bonsmara beef cattle compared to STM, regardless of protein supplementation. Feeding higher protein level increased CP digestibility compared to low protein supplementation (+7.92%, $P < 0.001$), while overall the mineral sources only tended to improve CP digestibility when HTM were fed (+3.18%, $P = 0.052$). High CP supplementation resulted in a higher acetate (+0.638 g/l, $P < 0.001$), and butyrate (+ 0.196 g/l, $P = 0.010$) production in the rumen compared to low CP supplementation, regardless of mineral source. Propionate production tended to be higher in the rumen of protein supplemented heifers (+0.114 g/l, $P = 0.060$), which tended to be more evident in heifers fed HTM.

© W.A.P. 2006 - 2022