

OASES - Abstract: preview

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Effects of Cu, Zn and Mn hydroxide minerals supplementation in cattle diets: A quantitative review

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The objective of this study was to answer the question “Does the complete substitution of sulfate trace mineral (TM) source by hydroxide sources of Cu, Zn and Mn improve DMI and NDF digestibility in cattle diets”? A quantitative summary was completed independently for each one of the two variables to demonstrate the impact of the complete replacement of the sulfate sources of Cu, Zn and Mn by hydroxide TM. Seven studies providing 11 comparisons were used in this quantitative summary with the objective to determine whether TM source of Cu, Zn and Mn affected NDF and DM digestibility. To be included, studies had to have some measure of digestibility, comparing sulfate and hydroxide trace mineral sources. Factors included to account for variability and possible effects on results included method of digestibility analysis, study design, beef vs. dairy cattle use, trace mineral levels and %NDF in diet. For standardization, the 24-hour time point was used for studies where in situ methods were employed for digestibility analysis. The quantitative summary was carried out independently for each variable of interest. Only digestibility of DM and NDF were available from all studies included. Overall, NDF digestibility was significantly increased by hydroxide minerals. For this variable, digestibility assessment method was retained as the only significant factor in the final model ($P = 0.029$). Total collection studies showed a mean increase in NDF digestibility of 2.81% ($P = 0.003$), whereas studies using uNDF240 as a marker for total-tract digestibility tended to point to a 1.70% increase in NDF digestibility ($P = 0.06$). Overall, there was no clear evidence of altered DM digestibility ($P=0.13$). However, model assessment revealed heterogeneity across studies. Among the explanatory factors evaluated, only sector (beef vs. dairy) was retained as a significant factor in the final model ($P = 0.026$). These results revealed a significant positive impact of hydroxide minerals in cattle diets

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