EFFECT OF COBALT SUPPLEMENTATION ON GAS PRODUCTION MEASUREMENTS, ESTIMATED ENERGY VALUES AND MICROBIAL PROTEIN, IN VITRO

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Abstract

In vitro gas production techniques simulate the rumen fermentation process and they have been used to evaluate the potential of feeds to supply nutrients to ruminants. Thus, effects of various levels of cobalt supplementation on gas production and rumen fermentation were investigated using an in vitro gas production technique. Ground samples (100 mg DM) of 70% wheat straw and 30% concentrate were incubated in 50 ml glass syringes with rumen fluid obtained from fistulated sheep fed berseem hay and commercial concentrate mixture twice a day. Cobalt (Co) was added at 0.00, 0.35, 0.70 and 1.0 mg/kg DM of feed. Cumulative gas production was recorded at 3, 6, 9, 12, 24, 48, 72 and 96 h of incubation and the kinetics of gas production was described by using the
equation $\text{Gas}(t) = a + b \left(1 - e^{-ct}\right)$. At 24 h, the gas production volume was highest for sample with the third level of cobalt (0.70 mg/ kg DM) ($P<0.05$) and greater for second and fourth levels of Co (0.35 and 1.0 mg/kg DM, respectively) ($P<0.05$) than sample without Co (control). Total gas production at 96 h and the maximum rate of gas production increased when Co was added to samples. Also, the results showed that there were significant differences ($p<0.05$) in metabolizable energy (ME) and net energy (NE), dry matter digestibility (DMD), organic matter digestibility (OMD), Short chain fatty acids (SCFA) and microbial protein. In an overall conclusion it seems that, the cobalt addition improved the rumen fermentation.

Key words: Wheat straw, gas production, digestibility, energy value, microbial protein, sheep

REFERENCES:
of gas production and nylon bag degradability of roughages in predicting feed intake in cattle.


