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## Dilution effects on magnesium efflux from the rumen.

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Factors affecting magnesium absorption from the rumen are integrally involved in grass tetany because most of the absorbed Mg passes through the rumen wall. Recent work has shown that ruminal Mg absorption occurs by a sodium-linked active transport following saturation kinetics. The dilution effects on Mg absorption were evaluated by a dynamic simulation of Mg flow in the rumen. As several factors in the rumen influence Mg availability, a simple rumen submodel was developed to predict rumen parameters (fiber content, microbial mass, liquid dilution rate, particulate passage rate) for different conditions. Cation-exchange capacity of fiber and the microbial mass as well as insoluble Mg complex formation reduce the available Mg pool for absorption in the model. Preliminary results for 500 kg cattle grazing crested wheatgrass (DMI = 1.2 % BW / day), indicate that efficiency of magnesium absorption from the rumen was greatly affected by liquid dilution rate. Without considering insoluble Mg precipitate formation, the efficiency of Mg absorption from the rumen ranged from .41 to .31 as the rumen liquid fractional passage rate varied from .08/h to .14/h. Factors affecting the rumen liquid dilution rate include rumen water holding capacity, saliva secretion, rumen osmolarity, and water intake from drinking and eating. Kinetic factors may be responsible for the poor efficiency of absorption of Mg under conditions when rumen liquid dilution rates are high.

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