COW-LEVEL ASSOCIATION BETWEEN SERUM VITAMIN D (25-HYDROXYCHOLECALCIFEROL) CONCENTRATION AND MAP-ANTIBODY SEROPOSITIVITY

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Besides its role in bone metabolism, vitamin D plays an important part in the modulation of the immune response (1). Vitamin D deficiency has been observed in patients with Crohn’s disease, tuberculosis (2) as well as other diseases. A pilot study at the University of Minnesota (n = 41 dairy cows) found that MAP-seropositive cows tended to have lower serum 25-OH vitamin D3 (25-OH-D3) concentrations, the accepted marker of vitamin D status, than test-negative herd mates (P= 0.09). In addition, the 25-OH-D3 concentration was associated with the S/P ratio of the cow -- the higher the ratio, the lower the 25-OH-D3 concentration. This might indicate that a progression of infection might be associated with reduced vitamin D levels. Whether this is due to impaired absorption of vitamin D through the MAP-infection damaged intestines, lack of sunshine exposure through year-round indoor housing or a higher turnover rate of internally produced 1,25(OH)D3 for the modulation of an out-of-control immune response or lower vitamin D receptors is currently unknown. This preliminary study had limited statistical power and had not measured the intake of vitamin D through nutrition and sunshine exposure nor other factors such as stage of lactation, which influence the serum 25-OH-D3 levels. Therefore, currently a study is conducted in 5 Minnesota dairy herds, which will compare the Vitamin D3 sero-levels between MAP-antibody sero-positive and ELISA-negative herd mates after accounting for their nutritional vitamin D intake, breed, predominant hair color, age, stage of lactation, milk production and farm location. Results will be presented at the conference.

References