Rumen-protected Methionine supplementation during the peripartal period alters the expression of galectin genes associated with inflammation in Peripheral Neutrophils and secretion in plasma of Holstein cows

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Short title: Methionine affects Galectin Expression in Cow blood

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Summary
This research aimed to investigate whether rumen-protected Met supplementation during the periparturient period affects the expression of galectins in blood-derived neutrophil, and secretion of galectins, IL(Interleukin)-1β, IL-6, myeloperoxidase(MPO), and glucose in plasma. Galectins (Gal) have an immuno-modulating effect by acting like cell-surface receptors whose activation often results in signaling cascades activating cells such as neutrophils. Because supplementation of rumen-protected Methionine (Met) alleviates inflammation and oxidative stress during the peripartal period, we hypothesized that enhancing Met supply during the periparturient period would benefit the innate immune response at least in part by altering the expression of galectin genes associated with neutrophils activity and inflammation. This study revealed an association between Met supplementation and galectin expression and secretion. This implies that galectin expression and secretion can be modulated by Met supplementation. Further studies are needed to evaluate the regulation of galectin gene expression for therapeutic and dietary intervention in the peripartal cow.