Secondary Plant Compounds Improve Cattle Production Efficiency, Health, and Product Quality

Research over the last six years has discovered that supplementation of cattle grazing lush green winter wheat forage with certain natural secondary plant compound extracts increases average daily gain by 15% to 20% for at least 60 days. Concurrently, supplementation reduced the frequency of frothy bloat by up to 90%. Companion research discovered that the greatest loss to frothy bloat on wheat pasture is likely not the 1% to 2% death loss, but the 20% to 50% reduction in average daily gain as cattle became more severely bloated. Currently, these commercial extracts are not FDA approved as feed additives and are not generally recognized as safe (GRAS). These are approved as flavoring agents. Discussions with FDA suggest that approval will require complete chemical characterization of commercial extracts and any semi or purified natural secondary plant compounds not in the original plant matrix.

Secondary plant compounds’ potential as anthelmitics is recognized in feeding condensed tannin containing forages to small ruminants. The potential internal parasite mitigation of these and other plant compounds remains unexplored in cattle. There have been promising in vitro results relative to larval inhibition with semipurified extracts in our laboratory.

Secondary compound extract supplementation has been found to alter generic fecal *E. coli* shedding. Cattle receiving finishing rations did not display similar decreases. To date, the preponderance of published research has focused on secondary-compound-containing forages and not variously purified extracts.

Results

Preliminary research results point to a potential application of extracts in limiting growth of *Staphylococcus aureus* associated with mastitis. This application possibility requires further investigation.

Increasing resistance to synthetic compounds in animal health requires an in depth evaluation of natural plant compounds for potential commercialization. Some secondary plant compounds analyzed in this research decrease in vitro methane production up to 17% in head-space fermentation gasses.

Data from a preliminary screening suggest some of these extracts have the potential to decrease oxidation and improve shelf life of prepared meat products. This line of inquiry is being followed up in a current set of experiments.

Secondary plant compounds can provide natural products for use in natural and organic beef production systems. The potential of novel secondary compound plant sources for use in animal health warrants further investigation.