

Alfalfa Value-Added Characteristics: Screening Cultivars for Beneficial Biochemical Compounds

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New markets for alfalfa could expand acreage present in the United States that would assist with climate smart initiatives. Traditionally utilized for livestock feed, alfalfa has the potential as a food ingredient. Alfalfa contains high concentrations of leaf protein and is known for meeting the human daily requirement for some vitamins. In this study we compared alfalfa with soybean meal and herbage to determine unique properties of alfalfa herbage, leaves, and stems. Vitamin A, B1, C and E were greater in alfalfa herbage than soybean herbage. Vitamin B9, B12, and K was found within alfalfa in higher concentrations than soybean meal. The anti-nutrient saponin was high in leaf and herbage tissue, but stem concentrations were similar to soybean meal. Fifty genetically diverse high leaf protein genotypes were then screened for vitamin B9, B12, K and saponins. Significant diversity was found for vitamin B9, B12 and K, however little genetic diversity was found for saponin concentrations. Vitamin A, B1 and K were found to be concentrations higher than 10% of the human daily requirement. Values of 10% or greater of daily requirements have the potential to be used as fortifiers in foods without additional processing. Within the diverse population vitamin K and B9 concentration were significantly greater than the original commercial variety screened against soybean. These data can be used to inform breeding programs interested in increasing the concentrations of these vitamins for human use.

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