One known function of tannins in biological systems is to bind proteins, making them unpalatable for herbivores. Moose in particular might consume so much tannin rich forage that they excrete more protein than they eat. My goal was to characterize protein precipitation capacity of a choice forage, Feltleaf Willow (*Salix alexensis*) to determine total digestible protein in forage along the Tanana river in Fairbanks, Alaska and see if plants that were browsed showed higher tannin levels and thus lower usable protein. Seasonal variation was also measured to gain insight into winter nutrition.

**Materials and Methods**

Leaves were collected from browse along the Tanana river from inside and out of moose-proof enclosures. The samples were freeze dried then ground with a 40 mesh Wiley Mill. Extractions were done with cold methanol (Martin and Martin 1982.). Samples were centrifuged and 35μl of the supernatant was pipetted into microplates and combined with 140μl of 5mg/ml BSA standard and centrifuged again. 5μl of this supernatant was put in a microplate well and 250μl of Bio-Rad Bradford quick assay reagent was added and the absorbance at 590nm was read and turned into concentration by a standards curve of BSA.

Net Protein was obtained by elemental analysis to find %N and multiplying by 6.25.

Digestible protein was obtained using the equation of Robbins et al. (1987)

Equation 1: $Z = -3.87 + 0.9283X - 11.82Y$

Where X is crude protein (%DM) and Y is PPC(μg/μl) and Z is Digestible Protein (%DM).

Variation was also measured to gain insight into winter nutrition.

**Discussion**

The data indicates that there is a difference in protein precipitation capacity of tannins, but not in nutrition (Fig 2,3) between browsed an unbrowsed samples, suggesting plants may respond to browsing. During the summer, tannins increase with time, but winter forage is similar to early summer. Usable protein remains constant over summer but decreases in winter, indicating that moose must alter behavior to account for lower nutrition in winter, as well as experience physiological changes to accommodate a 50% lower protein intake.

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