

The capacity of tannins from accessions of mulga (*Acacia aneura*) to precipitate protein

MM Ritchie, C Stimson, DM McNeill

MC Franklin Laboratory, University of Sydney, NSW 2570

Background – The nutritional value of the drought forage, mulga, is limited by its high content of tannins which reduce the digestibility of protein in livestock by forming complexes with proteins in the digestive tract. However, tannins can vary in their ability to interact with protein, highlighting scope for the selection of forages with less deleterious types of tannin.

Objective – To determine whether tannins extracted from some types of mulga are weaker than others in terms of their capacity to form precipitable complexes with protein.

Design – Tannin was extracted from leaves of four accessions of mulga and a reference fodder, *Leucaena pallida*. Binding curves were defined per tannin by plotting weights of protein (Bovine serum albumin) precipitated against weights of tannin added until sufficient tannin was added to precipitate all the soluble protein (0.5 mg) per tube. A sigmoid curve was fitted in order to calculate the weight of tannin required for 50% of maximal protein precipitation, with this point being defined as the relative binding-affinity for that tannin.

Outcomes – The mulga tannin with the weakest binding-affinity for protein was derived from accession 842394, with only 0.1551mg of its tannin required to achieve half-maximal protein precipitation. This was 151% of the amount required of the *L. pallida* reference tannin (0.1026mg) to do the same. By contrast, tannin from mulga accession 883558 had a dramatically greater binding affinity than the reference tannin, with only 0.0032mg required (3% of the amount of *L. pallida* tannin) to match the *L. pallida* tannin. Accessions 853437 and 842743 were not significantly different in binding affinity to the *L. pallida* tannin.

Conclusions- Variation in binding affinities between tannin from different mulgas highlights the potential to select for mulgas with tannin that are less deleterious to livestock.