

Effectiveness of Lespedeza Species as a Bioactive Forage in Ruminant Production Systems

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Background

Using *Lespedeza cuneata* (sericea lespedeza) as a tannin-producing bioactive forage for livestock is increasing in the United States. There are other *Lespedeza* species that have not been adequately evaluated and compared to *L. cuneata*.

Objectives

1. To analyze other *Lespedeza* species for condensed tannin (CT) production and bioactivity compared to *L. cuneata*.
2. To identify effective protein binding alternatives to potentially increase rumen undegradable protein.

Materials & Methods

Plant Materials: 12 *Lespedeza* spp. from the germplasm collection at the USDA Plant Genetic Resources Conservation Unit in Griffin, GA.

Plant Production: Plants were reared in a greenhouse and then transplanted to field plots at Fort Valley State University in Fort Valley, GA.

Plant Harvest: Following establishment plants were harvested, freeze dried, and ground to 1mm.

Laboratory Analysis: Consisted of protein-precipitable phenolics (PPP), total phenolics (TP), protein bound (PB), and protein bound (PB) to PPP ratio (PB:PPP).

Results

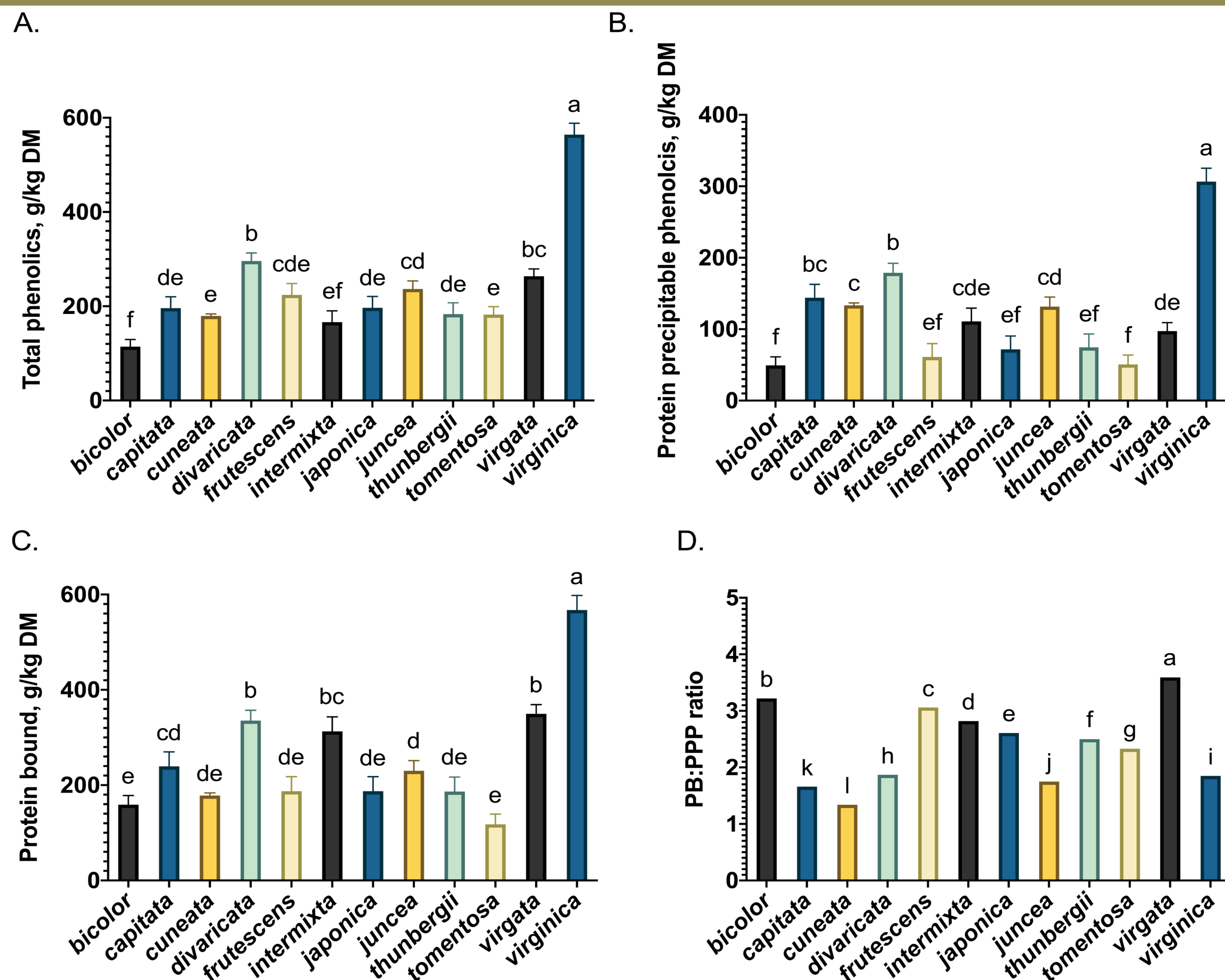


Fig. 1. A.) Total phenolic concentrations (g/kg DM) among the 12 lespedeza species. B.) Protein precipitable phenolic concentrations (g/kg DM) among the 12 lespedeza species. C.) Amount of protein bound (g/kg DM) among the 12 lespedeza species. D.) Protein bound to protein precipitable phenolic ratio (PB:PPP) among the 12 lespedeza species.

Conclusions

We concluded that *Lespedeza cuneata* (1.3363; $P < 0.0001$) was the least potent and bioactive of the species and *L. virgata* (3.5945; $P < 0.0001$) was the most potent and bioactive of the species. Our results suggest there are *Lespedeza* species, other than *L. cuneata*, with potential as a bioactive forage for use in ruminant production systems.