



Swainsonine Distribution in Locoweed Species, Plant Parts, and the Endophyte Transmission to Progeny

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Locoweed poisoning is one of the most widespread poisonous plant problems in the western United States. Locoweeds are *Astragalus* and *Oxytropis* species that contain the toxic alkaloid swainsonine. Swainsonine accumulates to different concentrations between locoweed species. Swainsonine accumulates in all parts of the plant with the highest concentrations found in the leaves and floral parts. Recently a fungal endophyte found in locoweed plant species has been implicated in the synthesis of swainsonine. Using modern molecular biology techniques the endophyte can be quantified in locoweed species. Two biotypes of *Oxytropis sericea* were identified that accumulate significantly different amounts of swainsonine in all tissues. The plants with the lowest concentration of swainsonine were found to have the lowest amount of endophyte. Furthermore, in plants colonized by the endophyte, the progeny inherit the endophyte and the ability to produce swainsonine. However, in plants where the endophyte has not effectively colonized the plant, endophyte colonization and the production of swainsonine are diminished significantly in the progeny. This research may lead to techniques and tools to modify or alter endophyte infection and subsequent swainsonine production. Such techniques could be used to alter locoweed toxicity, and avoid locoweed poisoning.

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