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MORPHOLOGICAL EXAMINATION OF PRAIRIE TURNIP (*PSORALEA ESCULENTA* PURSH) ROOT

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ABSTRACT

Psoralea esculenta Pursh is an herbaceous perennial legume, native to the Great Plains, that has a tuberous-thickened taproot. Native American populations have long used the roots of this plant as food source. The *Psoralea* root has a tough outer covering (bark) and a fleshy interior that contains numerous isolated vascular strands. Root tissues from mature and young roots were fixed and embedded in JB-4 plastic. Differential staining methods using Safranin, Toluidine Blue, IKI, and Aniline Blue were used to examine the tissue morphology. Digital pictures were made using a Leaf Microlumina camera attached to an Olympus bright field microscope. The root of *Psoralea esculenta* possesses a unique arrangement of vascular tissues embedded in secondary parenchyma with regions of cells containing large deposits of either protein or starch. Alteration of protein and starch reserves was observed in mature roots, but absent in young roots. The vascular strands appeared to be randomly arranged in the secondary tissues of the root. Further analysis at different developmental stages will help to clarify the unique anatomical features observed in the root of *Psoralea esculenta*.