Parthenium integrifolium L.

Prairie Dock Root

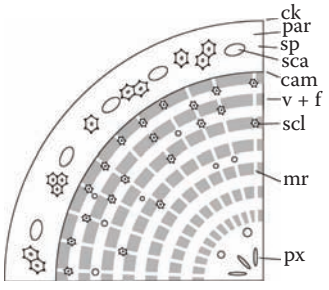
Parthenii Radix

Asteraceae

Prairie dock has been used knowingly and unknowingly as an adulterant of *Echinacea* species plants since at least the late 1800s. It is rarely included today as an ingredient in herbal immune formulas. For differentiation between prairie dock and *Echinacea* species, see separate entries for *Echinacea* species.

Transverse section: Dark brown epidermis in primary tissue; in older roots with secondary growth, cork is present; secretory cavities and phytomelanin-coated sclereids occur in the outer parenchyma and secondary phloem; secondary xylem has a radiate structure, with more or less rectangular groups of phytomelanin-coated fibers with attached vessels arranged in concentric rings separated by narrow bands of parenchyma and interrupted by narrow medullary rays consisting of very large, often ruptured cells and phytomelanin-coated sclereids. Medullary rays are without secretory cavities; in contrast to fibers, sclereids are yellow and ~40–60 µm diameter; primary xylem contains elongated narrow fibers free of phytomelanin.

Longitudinal section: Secondary phloem and xylem contain phytomelanin-coated sclereids (50–300 µm long) that have numerous pit channels and a small lumen; fibers in secondary xylem have a less thickened cell wall and slender shape with pointed ends; reticulate, scalariform, or bordered-pitted vessels; radially elongated secretory cavities in secondary phloem and xylem.



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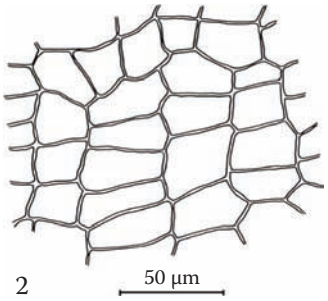
Starch: Very rare (at least in the author's material); granules are roundish, simple, or in pairs, single granules up to 12 µm; larger granules with a hilum appearing as a dot.

Powder: Large multiseriate fragments of phytomelanin-coated sclereids, often with pitted vessels attached; solitary sclereids; colorless parenchyma; infrequent vascular bundles contain phytomelanin-coated fibers; brown fragments of cork.

The roots of *Echinacea* species and *Parthenium integrifolium* are very similar microscopically. In the secondary xylem of *P. integrifolium,* the concentric rings of parenchyma as well as the medullary rays are very narrow compared to what is found in the underground parts of *Echinacea* species.



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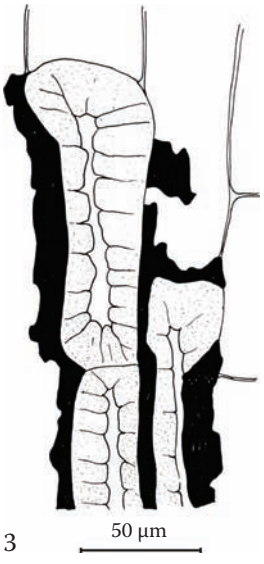

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