Angelica archangelica L.

Angelica Root

Radix Angelicae archangelicae

Apiaceae

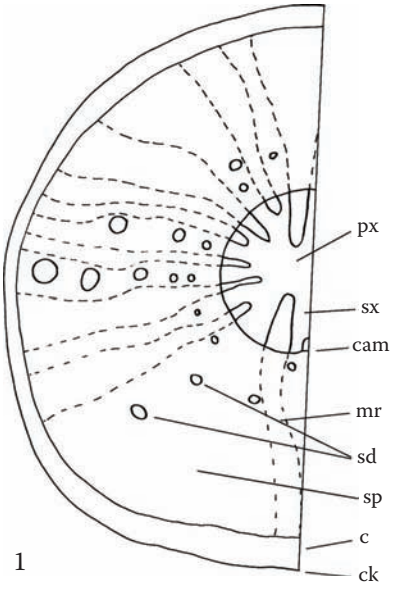
The roots of *Angelica archangelica* have been used since antiquity as a digestive bitter and apertif and are included as primary ingredients in many liqueurs including Benedictine and Chartreuse. Many species of *Angelica* are used in the market. The European pharmacopoeia cites the root of lovage (*Levisticum officinale*) as a potential adulterant. Both botanicals are in the Apiaceae family and share similar physical and organoleptic characteristics.

Transverse section: Thick cork, polygonal or elongated rectangular cells; cortex consisting of more or less spherical parenchyma cells loosely arranged, but may be absent in older roots; secondary phloem dominated by rectangular parenchyma cells, with tissue frequently ruptured; thickened but unlignified fibers may be associated with sieve cells; numerous secretory ducts in the phloem, up to 200 µm diameter, located between broad medullary rays two to six cells wide; ducts are smallest near the cambium, often larger in diameter than vessels; secondary xylem of large cuneiform groups of vessels and fibers alternating with medullary rays; vessels up to 70 µm diameter; smaller medullary rays end in the secondary xylem, and larger ones reach the primary xylem; secretory ducts are absent in the xylem.

Longitudinal section: Scalariform or reticulate vessels; secretory ducts in the phloem.

Starch: Present in secondary phloem and medullary ray parenchyma; mostly simple, subspherical granules, 2–4 (up to 8) µm diameter; centric hilum, appearing as a bi- or triradiate slit.

Powder: Predominantly fragments of parenchyma; cork; scalariform or reticulate vessels with attached fibers; secretory ducts; starch.



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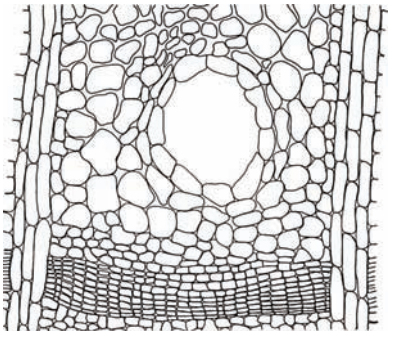

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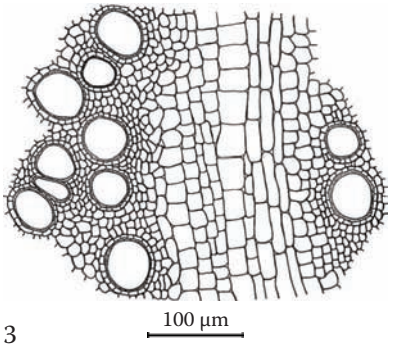

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