

Pharmacognosy

lab exercise 12



Macroscopy of miscellaneous drugs



Echinaceae radix

CzPh 2017

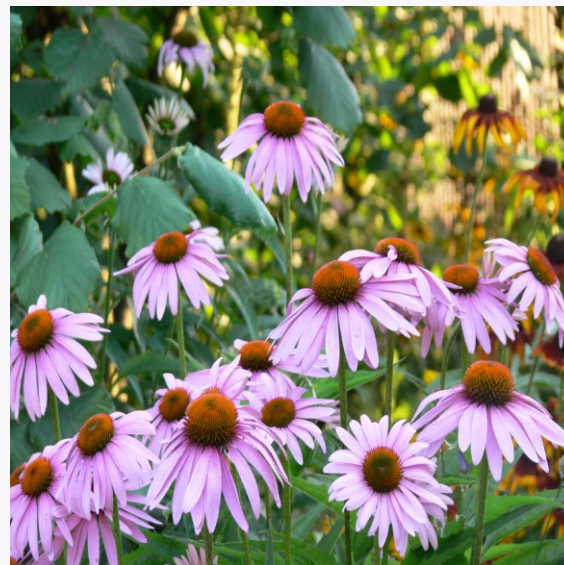
- *Echinaceae angustifoliae radix*
 - root of narrow-leaved coneflower
- *Echinaceae pallidae radix*
 - root of pale purple coneflower
- *Echinaceae purpureae radix*
 - root of purple coneflower





Echinacea angustifoliae radix CzPh 2017

- Mother plant: *Echinacea angustifolia*, Asteraceae, narrow-leaved coneflower root





Echinacea angustifoliae radix CzPh 2017

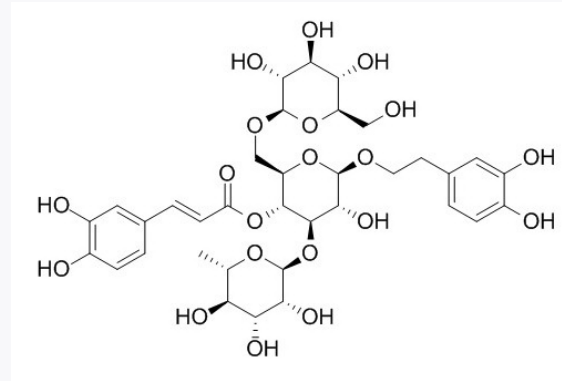
- Macroscopy: tubular roots 15 mm in diameter, sometimes helically twisted, upper side is light brown to yellow-brown. The root fracture is short, dark brown with a radiant structure.





Echinacea angustifoliae radix CzPh 2017

- Content compounds: **caffeic acid derivatives** (echinacosid), polysaccharides, alkylamides, glycoproteins, traces of pyrrolizidine alkaloids



echinacosid

- Usage: **immunostimulant** (extracts of root and flower as dietary supplements), antivirotic, antimycotic, antirheumatic; externally for poorly healing wounds, inflammation



Eleutherococci radix CzPh 2017

- Mother plant: *Eleutherococcus senticosus* (syn. *Acanthopanax senticosus*), **Araliaceae** (devil's bush, siberian ginseng)





Eleutherococci radix CzPh 2017

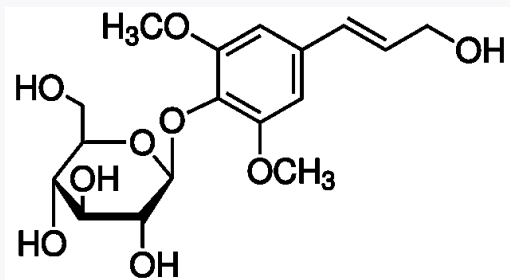
- Macroscopy: cylindrical rhizome with numerous nodular roots. The surface of the rhizome is bumpy, longitudinally grooved, gray-brown to red-brown. The roots are 3.5 -15 cm long, 0.3 -1.5 cm in diameter; on the surface smooth, gray-brown to black-brown. The bark is about 0.5 mm thick, close to the light yellow wood. After removing the bark, the root is yellow-brown.



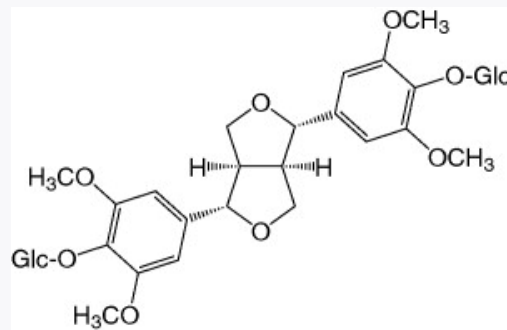


Eleutherococci radix CzPh 2017

- Content compounds: **saponins** (eleutherosid A), **phenylpropanoid glycosides** (eleutherosid B) and **lignans** (eleutherosid E), coumarins (isofraxidin), polysaccharides, mineral compounds



eleutherosid B (= syringin)
- glycoside of sinapylalcohol



eleutherosid E = syringaresinol-diglucoside

- Usage: **adaptogen**, tonic, immunostimulant; ethanolic root extract available as drops



Rusci radix CzPh 2017

- Mother plant: *Ruscus aculeatus*, **Asparagaceae** (butcher's broom)





Rusci radix CzPh 2017

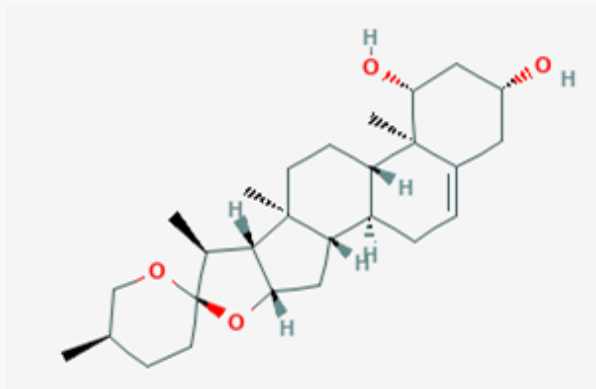
- Macroscopy: The drug consists of a rhizome with roots. The rhizome consists of yellowish, branched, cylindrical pieces, on the surface with thin annular grooves. The underside of a rhizome with numerous roots or scars after them; roots about 2 mm in diameter have a similar color to the rhizome. The outer layer can be easily peeled off, the middle part under it is hard, yellowish white.



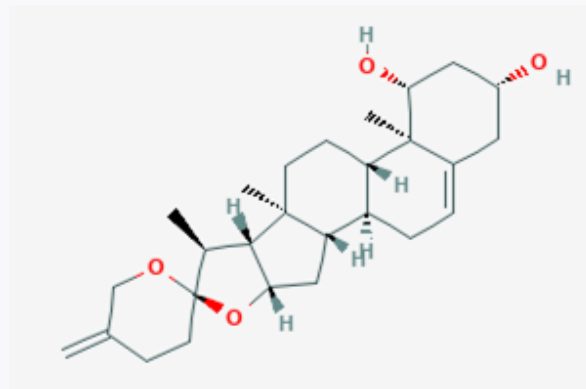


Rusci radix CzPh 2017

- Content compounds: steroidal saponins (at least 1%) – ruscogenins, neoruscogenins; sterols, triterpenes, flavonoids, coumarins



ruscogenin



neoruscogenin

- Usage: vasoprotective, venoprotective



Ginkgo folium CzPH 2017

- Mother plant: *Ginkgo biloba*, *Ginkgoaceae* (maidenhair tree)
- *Ginkgo extractum siccum raffinatum et quantificatum* CzPh 2017





Ginkgo folium CzPH 2017

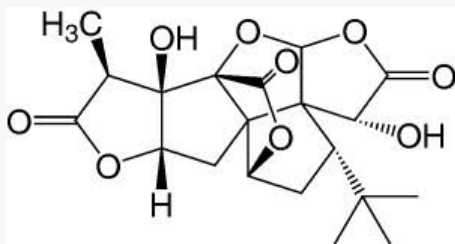
- Macroscopy: The leaf is slightly darker on the upper side than on the lower side. The blade of the leaf is fan-shaped, usually bilobed or sometimes without lobes. The leaf is glabrous on both sides, the veins are dichotomous. The blade is wide at the upper edge with an irregular notch of various sizes





Ginkgo folium CzPH 2017

- Content compounds: flavonoids, terpenic lactones, organic acids, carotenoids, saccharides



ginkgolid A



- Usage: dementia treatment, **nootropic**, adjuvant vasodilators; *Ginkgo extractum siccum raffinatum et quantificatum* - Gingio, Tanakan, Tebokan; dietary supplements (pills)



Hederae folium CzPh 2017

- Mother plant: *Hedera helix* L., **Araliaceae** (common ivy, European ivy)





Hederae folium CzPh 2017

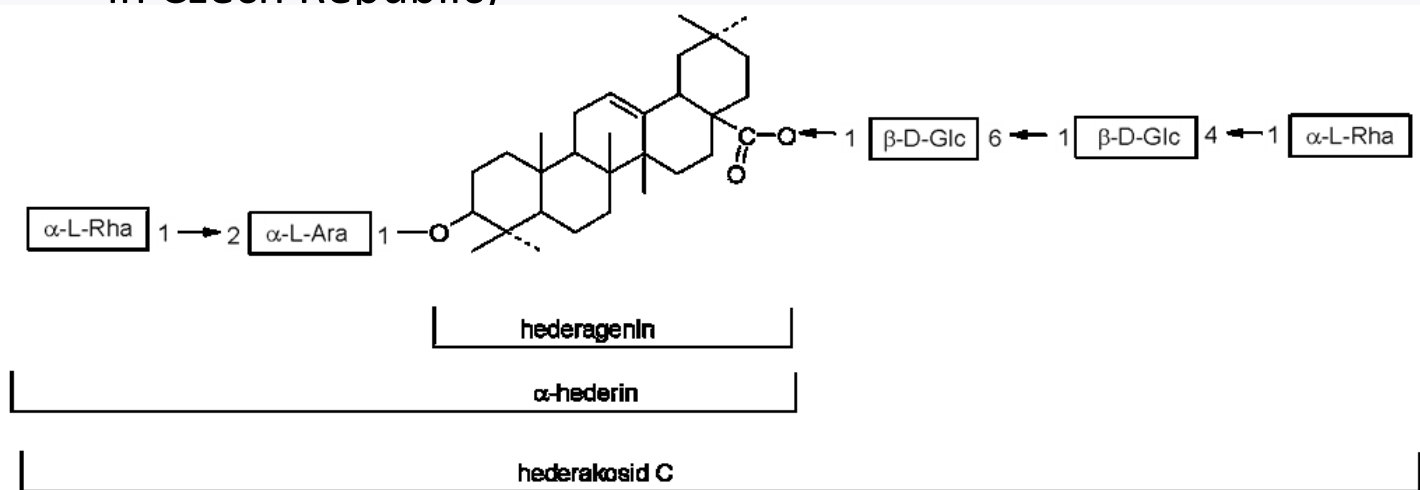
- Macroscopy: leathery leaves, cordate at the base. Smooth edged, palmately trilobal to five lobed, with more or less triangular lobes. The upper side of the leaf is dark green with palmate veins; the lower side is more gray-green, with clearly prominent veins. Petioles and blades of younger leaves are scattered with white hairs, older leaves are glabrous.





Hederæ folium CzPh 2017

- Content compounds: triterpenoid saponins - hederacosid C, which by drying breaks down to α -hederin
- Usage: expectorans, coughing syrups (*Hederæ folii extractum spissum* -Hedelix in Czech Republic)





Solidaginis virgaureae herba CzPh 2017

- Mother plant: *Solidago virgaurea*, Asteraceae (European goldenrod)





Solidaginis virgaureae herba CzPh 2017

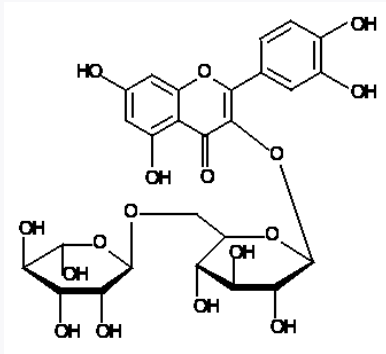
- Macroscopy: stem cylindrical, longitudinally grooved, glabrous or pubescent. Leaves ovate to oval, entire, glabrous on both sides n. Scattered hairy. The capes are arranged in a narrow lath of female lingual flowers and bisexual tubular flowers. All flowers are yellow. The drug is odorless, the taste is bitter.



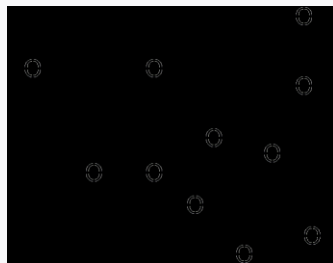


Solidaginis virgaureae herba CzPh 2017

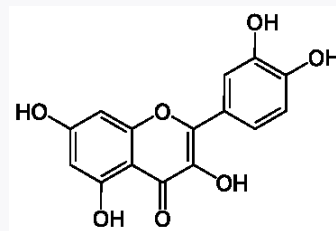
- Content compounds: **flavonoids** (0.5-1.5 %; rutin, quercitrin, hyperoside, aglycones quercetin, kaempferol), saponins, tannins



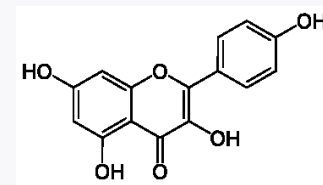
rutin



quercitrin



quercetin



kaempferol

- Usage: diuretic, antiphlogistic; externally for purulent wounds



Tanacetum parthenii herba CzPh 2017

- Mother plant: *Tanacetum parthenium*, Asteraceae (feverfew)





Tanacetum parthenii herba CzPh 2017

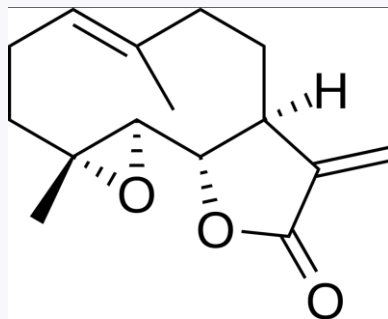
- Makroskopie: stem branched, almost square, longitudinally grooved. Leaves ovate, pinnate, with 5-9 segments with jagged edge and blunt tip, slightly pubescent. Hemispherical intervention from overlapping leaves. Perimeter flowers are white, female; target tubular flowers are yellow, bisexual. The drug has an aromatic aroma and a sharp, bitter taste.





Tanacetii parthenii herba CzPh 2017

- Content compounds: essential oils (sesquiterpene lactone parthenolid), bitter substances, tannins, mucilage



parthenolid

- Usage: analgetic (migraines, menstrual pain), antipyretic; historically was used to reduce fever - hence the name feverfew



Hibisci sabdariffae flos CzPh 2017

- Mother plant: *Hibiscus sabdariffa*, Malvaceae (roselle)





Hibisci sabdariffae flos CzPh 2017

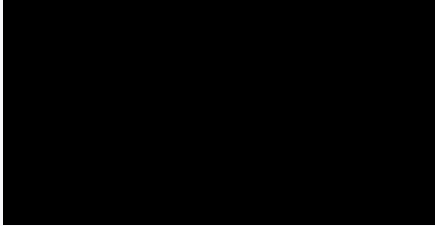
- Macroscopy: dried flower is light to dark violet-red and fleshy, after drying calyx and goblet are brittle. The chalice is jug-shaped in the lower half, in the upper half with five long pointed points bent backwards. The cup consists of 8-12 leaves grown to the base of the chalice





Hibisci sabdariffae flos CzPh 2017

- Content compounds: at least 13.5 % **organic acids** (ascorbic, citric, malic, tartaric), **anthocyanins**, flavonoids, fytosterols, pectin



ascorbic acid



citric acid



- Usage: delicacy (tea, wine), source of vitamin C, antioxidant, (antiphlogistic, hypotonic, antisclerotic)
 - In Carribean, fruit is boiled for 8-10 minutes, in Jamaica the drink is seasoned with rum, seasonal Christmas drink in Trinidad
 - Europe - in many herbal teas as a coloring agent



Lupuli flos CzPh 2017

- Mother plant: *Humulus lupulus*, Cannabidaceae (common hop)





Lupuli flos CzPh 2017

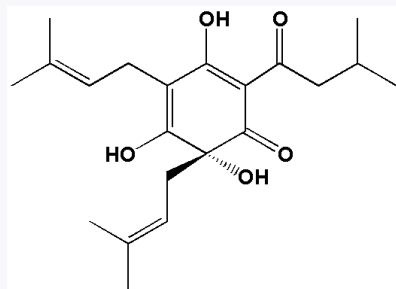
- Macroscopy: dried, usually whole female inflorescences. Hop cones are usually individual, 2-5 cm long, ovoid in shape, composed of numerous oval green-yellow, overlapping leaves. The outer bracts are flat, regular, the inner bracts are longer, irregular at the base, completely enclosing the fetus (achene = *achenium*). The testicles, base of the leaves and leaflets are covered with small orange-yellow glands



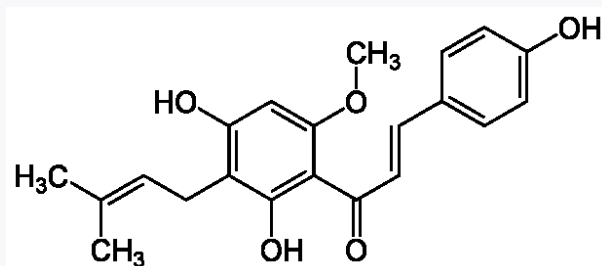


Lupuli flos CzPh 2017

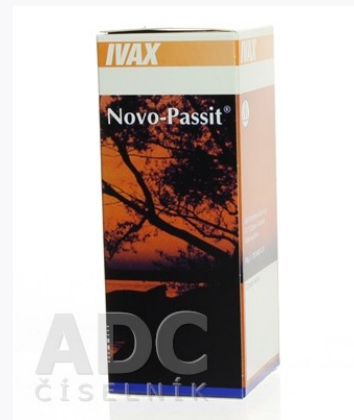
- Content compounds:** bitter substances (bitter resin acids, 15-30 %) = prenylated acylphloroglucinols (**humulon, lupulon**); flavonoids, prenylated chalkons (xanthohumol), essential oils (0,3-1%, monoterpenes, sesquiterpenes: myrcen, humulen, farnesen, karyofylen)



humulon



xanthohumol



- Usage:** amare, stomachic (bitter acids), sedative (Novo-Passit - *Humuli lupuli extractum* + other plant extracts + guaifenesine), anafrodisiac (antigonadotropic glucoprotein); female fruits in brewing industry



Thank you for your attention!