

323. *SOLANUM DULCAMARA* L. (SOLANACEAE) — Bittersweet, Bitter Nightshade, Felonwood

Shepherds once hung it around the necks of sheep suspected of being under the influence of the "evil eye". Sold as a dangerous drug. Shoots said to be eaten by muskrats, the berries in winter by grouse and pheasant. In Russia, the plant is used for the synthesis of progesterone, cortisone, and other hormones.

Widely used folklorically for felons, tumors, and warts, bittersweet or alcoholic extracts of rhizomes and roots, etc. possess significant antitumor activity. Recommended by Galen (AD150) for tumors, cancer, and warts, woody nightshade has proven out. Beta-solamarine has proven active against Sarcoma 180. Extracts also inhibit Walker carcinosarcoma-256 in rats.<sup>1,4,10</sup> Recommended for asthma, arthritis, bladder ailments, bronchitis, cancer, catarrh, dysmenorrhea, eczema, excrescences, fever, hepatitis, jaundice, leprosy, malaria, pertussis, rheumatism, scrofula, skin ailments, splenitis, swellings, tumors, ulcers, warts, whooping cough.<sup>16,33</sup> Considered alterative, analgesic, anaphrodisiac, anodyne, antidotal, cardiotoxic, depurative, diaphoretic, diuretic, emetic, expectorant, hypnotic, laxative, narcotic, refrigerant, resolvent, sedative, stimulant, sudorific, tonic, and toxic. The infusion of dried branches is said to be analgesic and sedative. Homeopaths recommend a tincture of fresh green stems and leaves, gathered just before flowering, for adenitis, angina, aphonia, asthma, bladder, blepharophthalmia, catarrh, cholera, colic, crusta lactea, cystitis, diarrhea, dropsy, dysentery, dysuria, emaciation, enteritis, exostosis, gastritis, glossitis, hemorrhage, hemorrhoids, hay fever, incontinence, meningitis, myalgia, myelitis, neuralgia, ophthalmia, paralysis, pemphigus, psoriasis, rheumatism, scarlatina, scrofula, stammering, stiff neck, tenesmus, tibial pain, tongue, tonsillitis, tumor, typhoid, urticaria, warts, and whooping cough.<sup>30,33</sup>

Bittersweet contains the alkaloid solanine, which acts narcotically, and the glucoside dulcamarine. Glycoalkaloids present in the plant include: alpha-, beta-, and gamma-soladulcine (aglycone, soladulcidine [solasodan-3-ol]), and alpha-, beta-, and gamma-solamarine (aglycone, delta-5-tomatiden-3 beta-ol). An isomer of gamma-solamarine, viz. gamma-solamarine, and a derhamnosyl derivative of alpha-solamarine, named delta-solamarine, have been identified. Soladulcine is tetraoside of soladulcidine, the sugars identified in the hydrolysate of the glycoalkaloid being D-xylose, L-rhamnose, D-galactose, and D-glucose. Alpha-solamarine is a trisaccharide of tomatiden-3 beta-ol, the sugar components being D-glucose, D-galactose, and L-rhamnose; the sugar components of beta- and gamma-solamarines are, respectively, D-glucose and L-rhamnose (2 mol); and D-glucose and L-rhamnose. The presence of solanine, solasonine, and solamargine in the plant has also been reported. Yamogenin, tigogenin, and diosgenin are present; the first two compounds occur in high concentrations in the inflorescence of the plant. From the roots, 15 alpha-hydroxy-soladulcidine, 15 alpha-hydroxysolasodine, 15 alpha-hydroxytomatidine, and 15 alpha-hydroxytomatidenol have been isolated. Green and yellowing fruits contain a higher percentage of glycoalkaloids than the ripe (red) fruits. As the fruit ripens, the glycoalkaloids and their aglycones tend to disappear, while the nitrogen-free sapogenins remain. Wild plants contain soladulcidine, while cultivated forms contain either soladulcidine or 5-tomatiden-3-beta-ol, or both.<sup>1</sup> Fruits contain lycopene. A monohydroxy lycopene, lycoxanthin (C<sub>40</sub>H<sub>56</sub>O), and a dihydroxy lycopene, lycophyll (C<sub>40</sub>H<sub>56</sub>O<sub>2</sub>), have been identified. Resins, saponins, and tannins are also reported.<sup>27</sup> Leaves contain the galactosides from cholesterol, brassicasterol, campesterol, stigmasterol, and beta-sitosterol and their palmitic-acid esters.<sup>33</sup> Willuhn and May<sup>300</sup> identified from tissue cultures the 4,4-dimethylsterols cycloartenol, cycloartanol 24-dihydrolanosterol, and 24-methylenecycloartanol, and the sterols cholesterol, 24-methylencholesterol, campesterol, stigmasterol, isofucosterol, and sitosterol. The main fatty acids of the petrolether soluble lipids of the callus are palmitic-, linoleic-, and linolenic-acid. On