

Described as representing "a whole apothecary shop", *Centella* is used as a restorative in both salads and teas. Gotu kola has been regarded as a treatment for leprosy. The carcinogen asiaticoside is "active in the treatment of leprosy," probably dissolving the waxy coating of the bacterium. Brazilians take the plant for uterine cancer.<sup>42</sup> It is also said to be useful for pruritis, sores, tuberculosis, and wounds.<sup>33</sup> In large doses the drug is said to be stupefying, narcotic, producing giddiness and sometimes coma.<sup>1</sup> In folk medicines it is used for abscesses, asthma, boils, bronchitis, cancer, cataracts, catarrh, convulsions, dropsy, dysentery, earache, elephantiasis, eczema, fever, gonorrhea, headache, hypertension, insanity, jaundice, kidney problems, leprosy, leucoderma, leucorrhea, liver, lungs, pleuritis, rheumatism, ribache, scrofula, skin diseases, spasms, syphilis, tuberculosis, tumors, ulcers, and urethritis.<sup>1,22,37,40,42</sup> Seeds are used for dysentery, headache, and fever. Perry notes that if a small quantity is eaten, it stimulates the appetite, aids digestion, and alleviates bowel trouble in children.<sup>16</sup> It is valued in cleaning and healing sores and ulcers and other skin ailments. In the Konkan of India, one or two leaves are given every morning to cure stuttering, and the juice is applied to skin eruptions. Ayurvedic medicine suggests the plant for anemia, asthma, biliousness, blood disorders, bronchitis, fever, inflammations, insanity, leucoderma, splenomegaly, thirst, and urinary discharges.<sup>26</sup> In Unani, it is used for asthma, bronchitis, dysuria (scalding), headache, hiccough, and inappetence. Decoctions of young roots are administered for hemorrhoids. Used as a poultice on sores and on joints pained with rheumatism. Hot juice of the roots is used to treat infected cuts. It is considered alterative, digestive, diuretic, refrigerant, restorative, and tonic. The leaf juice is employed in the Philippines for sclerotic wounds. The old report of Chinese LiChing Yun, who lived many years and had many wives and drank Fo Ti Tieng,<sup>128</sup> is responsible for many inquiries from people seeking the Fountain of Youth. Maybe LiChing Yun would have lived much longer and had more wives had he not drank the tea. Tyler concludes<sup>37</sup> "there is currently no evidence to support the use of gotu kola as a longevity promoter or to substantiate any of the other extravagant claims for revitalizing and healing . . . Substantive data on its safety and efficacy are simply nonexistent."

Nutritional analyses of the leaves reveal per 100 g: 34 calories, 89.3 g water, 1.6 g protein, 0.6 g fat, 6.9 g carbohydrate, 2.0 g fiber, 1.6 g ash, 170 mg Ca, 30 mg P, 3.1 mg Fe, 414 mg K, 6580  $\mu\text{g}$   $\beta$ -carotene, 0.15 mg thiamine, 0.14 mg riboflavin, 1.2 mg niacin, and 4 mg ascorbic acid.<sup>21</sup> Quisumbing quotes an earlier analysis of air-dried leaves:<sup>127</sup> 7.2% ether extract, 17.2% protein, 9.1% ash (1%  $\text{P}_2\text{O}_5$ ; 1.5% Ca, 0.1%  $\text{Fe}_2\text{O}_3$ , etc.), 9.1% crude fiber, 4.6% reducing sugars, 2.0% nonreducing sugars, and 50.9% undetermined. He reported absence of cyanophoric glucosides, alkaloids, and saponins, with some resin, tannin, and volatile oil. It was uncommonly rich in vitamin B.<sup>127</sup> Sitosterol is found in the alcoholic extract of the herb along with a fatty oil consisting of the glycerides of oleic, linoleic, linolenic, lignoceric, palmitic, and stearic acids. Centoic acid ( $\text{C}_{30}\text{H}_{48}\text{O}_6$ ) and centellic acid ( $\text{C}_{30}\text{H}_{40}\text{O}_6$ ) have also been identified.<sup>1</sup> The glycoside madecassoid is antiinflammatory.<sup>33</sup> A bitter principle, vellarine, is present in the leaves and roots, along with pectic acids and resins.

**Toxicity** — The glycosides, asiaticoside and centelloside, have also been reported, and an alkaloid, hydrocotylin ( $\text{C}_{22}\text{H}_{33}\text{NO}_8$ ). Asiaticoside is carcinogenic. Yet it is said to stimulate wound healing; it is also active against the tubercular bacillus. Some species are said to be poisonous to sheep. Under the name of *C. coriacea*, it has been reported to contain the poison hydrocyanic acid.<sup>3</sup> Tyler<sup>37</sup> notes two saponin glycosides with sedative activity, brahmoside and brahminoside. Morton<sup>42</sup> mentions, also, thankuniside, reporting that asiaticoside and methyl-5-hydroxy-3-6-diketo-23(or 24)-nor-urs-12-3nZ-28-oate cause consistent reduction of fertility in female mice.