

quantity. In the U.S., leaf and oil cannot be sold legally; in Europe, it is considered antiseptic, carminative, cholagogue, diaphoretic, digestive, emmenagogue, pectoral, stimulant, and sudorific.<sup>27</sup>

Plant yields 1 to 2% of a yellow or greenish volatile oil. Pulegone content ranges from 9% in Brazilian varieties, to 16 to 30% in the U.S. varieties, to 80 to 94% in European varieties.<sup>3</sup> Fujita and Fujita report the following among the autoxidation products and neutral compounds of the essential oil: alpha-pinene, beta pinene, limonene, 3-octanone, *p*-cymene, 3-octylacetate, 3-octanol, 1-octen-3-ol, 3-methylcyclohexanone, menthone, isomenthone, isopulegone, pulegone, piperitone, *cis*- and *trans*-pulegone oxide, piperitenone, dehydroxymethofuran-oxide, menthofuran oxide, caryophyllene, beta-humulene, and paraffins. Among the acidic compounds and autoxidation products were lauric acid, myristic acid, palmitic acid, beta-methyl-adipic acid, beta-methyl-delta-isobutyryl-valeric acid, phenol, *o*-cresol, *p*-cresol, salicylaldehyde, and eugeonal. Diosmin and hesperidin are also reported.<sup>33</sup> Dry seeds contain 24.6% protein, 26.6% fat, 11.1% ash, 0.9% Ca, 0.5% Na, and 1.5% K.

**Toxicity** — In 1978, a young lady in Colorado died as a result of ingestion of pennyroyal oil in an attempt to induce abortion. Like various other volatile oils, pennyroyal oil is reported to be ecboic but abortion is impossible by a dose which is safe. An amount of this oil, capable of inducing abortion, is likely to produce irreversible renal damage. A teaspoon of the oil produces serious effects: delirium, unconsciousness, tetanic spasms, opisthotonus, shock. "Less than one ounce is likely to kill the patient . . ." <sup>33</sup> "While pennyroyal oil may indeed induce abortion, it does so only in lethal or near-lethal doses. Such amounts would ordinarily not be obtained from drinking a tea prepared from the herb . . ." <sup>37</sup> American pennyroyal contains up to 2% of a volatile oil, and European pennyroyal up to 1% of an even more disagreeably smelling volatile oil. Both oils consist of 85 to 92% pulegone and are, therefore, quite toxic, causing severe liver damage, even in relatively small amounts. Two tablespoonfuls of pennyroyal oil caused the death of an 18-year-old expectant mother in spite of intensive hospital treatment initiated just 2 hr after she took it. As little as 1/2 teaspoonful of the oil has produced convulsions and coma in one individual.<sup>37</sup>