

acid, parasarone, pinene and trimethylamine. Oil from dried rhizomes of an Indian specimen (yield 2.8% oil) contained 82% asarone, 5% calamenol, 4% calamene, 1% calameone, 1% methyleugenol, and 0.3% eugenol. Two bitter principles, acorin and acoretin, are reported. Mucilage, resins, and tannins are also reported.

**Toxicity** — Oil of Calamus has been shown to be carcinogenic,<sup>17</sup> probably due to its asarone or safrole content. Beta-asarone is the reputed mild hallucinogen in the plant.<sup>54</sup> Classified by the FDA as an unsafe herb. "Oil of Calamus, Jammu variety, is a carcinogen."<sup>62</sup> Oil of calamus has been shown to possess considerable toxicity in long-term feeding studies in rats. After 18 weeks the animals exhibited depressed growth, liver and heart abnormalities, and a serious effusion in the abdominal and peritoneal cavities. Malignant tumors in the duodenal region were noted initially after 59 weeks (in animals fed 500 to 5000 ppm, but not in controls).<sup>37</sup>