

SCIENTIFIC SECTION, AMERICAN PHARMACEUTICAL ASSOCIATION

PHYTOCHEMICAL NOTES.*

From the Laboratory of Edward Kremers.

83. The Cones of *Pinus sabiniana*.

BY L. J. OSTLUND.

Although the oleoresin and its components of the Digger's pine have been examined repeatedly, the seeds from which the tree derives its popular name, do not appear to have been investigated even in a preliminary manner.

A large quantity of cones having been obtained through the courtesy of the Forest Products Laboratory, the opportunity to make a beginning in this direction seemed too good to be neglected.

The Seeds.—Inasmuch as the seeds have been used by the Digger Indians as food, it seemed desirable to ascertain the amount of food material obtained from one cone. The average number of seeds from a medium-sized cone was found to be 181, eleven cones having yielded 1810 seeds. The total weight of these seeds was 1430 Gm., hence each cone produced, on the average, 143 Gm. of seeds. In other words, each seed weighed somewhat less than one gram. The average weight of a single cone was 610 Gm.

100 Gm. of seeds, having been weighed, were cracked carefully and the kernels collected and likewise weighed after the seed coats had been removed. These kernels weighed 23.2 Gm., hence constitute 23 percent of the seeds. They have a rather pleasant, bland, somewhat oily taste.

When subjected to continuous extraction with heptane, 23.2 Gm. of the kernels yielded 10.8 Gm. of oil, corresponding to 46.5 percent of oil in the kernels, or 10.8 percent of oil in the seeds.

The heptane used was obtained by fractionation of the oil from Digger's pine.

1000 Gm. of seeds finely ground and subjected to continuous extraction with ether yielded 118 Gm. of oil or 11.8 percent. This oil is heavy and thick and has a dark yellow color.

The kernels of 500 Gm. of the seeds deprived of their seed coats subjected to expression produced 30.5 Gm. of a viscid, colorless oil, having the specific gravity of 0.958. Yield, 6.1 percent with reference to seeds. The expression, however, was imperfect.

Fatty Oil Obtained from the Seeds.—So far as the material permitted, some of the more common physical and chemical constants of the fatty oils, obtained as described above, were determined. The specific gravity was determined by means of a Mohr-Westphal balance. The saponification, iodine, and acid values were determined in accordance with the directions given under "Tests, etc.," of the U. S. Pharmacopoeia, 8th decennial revision, pp. 535 and 536. The results are herewith tabulated:

* Read in abstract before Scientific Section, A. Ph. A., Atlantic City meeting, 1916.

	Sp. gr. at 20°.	Sapon. val.	Iod. val.	Acid val.
Oil obtained by extraction of kernels*.....	0.952
Oil obtained by extraction of seeds.....	0.921	136.9	94.6	42
		138	44
Oil obtained by expression of kernels.....	0.958	146	108	56
		147.2	54

The amount of oil obtained by heptane extraction of the kernels was too small to admit of extended analytical study. The difference between both physical and chemical constants of the heptane extract of the comminuted seeds and the expressed kernels can readily be explained by the difference in the two products consequent by the method employed. The heptane extract was not only that of the kernels but that of the seed coats as well. A comparison of the yield of the heptane extract of the seeds with that of the expressed oil from the kernels reveals clearly that the expression was far from quantitative.

The Oleoresin of the Cones.—When the oleoresin of Digger's pine is referred to, that of the wood is generally implied. This has received attention on the part of several investigators. Another oleoresin, quite different in appearance, is that which oozes from the tips of the scales of the cones. It is sulphur-yellow, clear and transparent, when fresh, but upon prolonged exposure it loses its transparency and softness and becomes more or less brittle.

From ten cones 77.6 Gm. of oleoresin were collected, averaging 7.6 Gm. per cone. Inasmuch as the average weight of a cone is 610 Gm., it becomes apparent that slightly more than 1 percent of oleoresin was thus obtained. Presumably a larger amount could be obtained by extraction with the proper solvent.

The saponification value was determined according to the U. S. P. (pp. 535 and 536), the acid value by the indirect method, according to the same standard (p. 131).

Sap. No. 152.9 and 154.5. Acid No. 147.0 and 147.0.

NOTE.—The distillation of a number of fresh cones several years ago yielded but a few Cc. of a volatile oil which thickened before it could be investigated.

A NEW DIGESTANT.*

BY W. A. KONANTZ.

A great deal of criticism has been brought against many of the National Formulary and commercial galenicals intended as digestants, on the ground that they are unscientific, and can possibly have no value apart from that which may be ascribed to purely psychological influences. It is, indeed, remarkable how little consideration has been given, in formulating these preparations, to the fundamental physiologic facts relating to digestion and digestive ferments, or to the properties and incompatibilities of the substances combined. Of the nineteen digestants in the National Formulary, twelve are absolutely ineligible in the light of these facts, three are of doubtful utility, and the remaining four, while free from other serious objection, are so limited in their scope and so feeble in their power that, from the standpoint of practical therapeutics, they are useful

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