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## EXPERIMENTAL

In order to compare some unofficial aloins with the U. S. P. Aloin, the following technique for determining the irritation of the mucosa was developed. Well-nourished, healthy guinea pigs, weighing around 300 Gm., were subjected to Nembutal anesthesia (30 mg. per Kg.). An incision was made in the abdomen and the ascending colon exposed. A 5-cm. loop of large intestine was tied off with thread and 0.5 cc. of a solution of the aloin in question injected into the loop, the loop returned to the abdomen and the abdomen sewed up loosely. The animal was kept warm, and after an hour the gut loop was again brought to the surface and the isolated loop cut away. The excised loop was carefully washed free of fecal matter, opened and the degree of redness of the interior surface compared with a similar loop from a control animal. The control animal received a solution of aloin, Merck, in a concentration of 1.0-1.5 mg. per cc. The concentration of test aloin and volume of solution injected were always the same as in the control.

Table I indicates the results obtained with some unofficial aloins. These aloins were prepared by the Purdue University School of Pharmacy and submitted to this laboratory for testing. The aloins were extracted from several different aloes and by new and different processes. The standard was considered to have an irritating effect of two plus and the other aloins compared with it. Based on practice determinations, a change of one plus in either direction is of doubtful significance. From these data the unofficial aloins are probably no more irritant than the official product.

## The Irritant Effect of Aloin. Preliminary Note

By *Melvin W. Green\**

America produced, in 1931, \$20,461,000 worth of laxatives (1). But in spite of the economic value of the cathartic drugs, little serious attention has been given to the chemistry, pharmacology or physiology of laxation.

For some time the author has been interested in tools for studying these problems and applying them to the anthraquinone-bearing drugs such as senna, aloes, cascara and rhubarb.

The most obvious study, to begin such a project, is the assay of these drugs for cathartic value. We have already worked out some methods for assaying which, while not sharply quantitative, are very useful as tools (2) (3).

But in addition to assay methods, it is important to find measures of untoward effects which may or may not contribute to catharsis. Alvarez (4) has shown that if rabbits are purged and then killed by a blow on the head, isolated gut strips from such animals are considerably atonic. In addition, the animals appeared to be depressed. Larson and Bargan (5) have also shown in surgical dogs that laxatives upset the normal gut movements so that, in the case of the more drastic purges, it is actually days before the movements become normal.

Table I.—Effect of Various Aloins on Intestinal Mucosa

Aloin	Inflammation
Standard	++
Socratine aloin	+
Barbadoes aloin	+++
Cape aloin No. 1	++
Cape aloin No. 2	+ ?
Cape aloin No. 3	+

It was thought advisable to check this irritation with actual griping in human subjects. This phase of the problem is in the preliminary stages, but of the aloins tested, none of them is as griping, in 1/4 gr. doses, as is the commercial product.

## SUMMARY

In order to compare some unofficial aloins with the U. S. P. Aloin, the author has developed a technique for determining the irritating effect on the intestinal mucosa.

The author wishes to acknowledge with gratitude the provision of the aloin specimens by Dr. Jordan of Purdue University and the generous gifts of guinea pigs supplied by the William S. Merrell Drug Company.

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## Preliminary Studies with *Nepeta Glechoma*\*

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*Nepeta Glechoma*, Benth (*Glechoma hederacea*, L), more commonly called Ground Ivy or Gill-over-the-ground, is beautiful when grown under controlled conditions in a rock garden, but is a pesty weed when it escapes. The plant is a common member of the *Labiatae*, naturalized from Europe and recognized by square stems and more or less two-lipped corollas.

One of the authors was led by curiosity to ascertain something of the chemical nature of this member of the mint family. Unfortunately, much of the "weed" had been discarded before the inspiration came to attempt an investigation. Upon consultation with the U. S. Department of Agriculture, there were furnished two brief references (1, 2), stating that Schimmel and Co. had distilled 0.03 per cent of the volatile unpleasant-smelling oil from the plant; the oil has a dark green color; that H. Haensel had obtained 0.064 per cent of oil from the dry herb, with a density of 0.9296 at 21° C.; that the oil showed traces of aldehyde or ketone; and that tannin and bitter substances were present. No other references have been found to this variety of *Nepeta*. However, brief statements were found concerning the following varieties of *Nepeta*: *N. Botryoides* (3); *N. Botryoides-Artemisia* S. minor (3); *N. Bucharia*, *N. Grandiflora* and *N. Podstachys* (4); *N. Cataria* (seeds) (5).

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## EXPERIMENTAL

*Preparation of the Material.*—During the spring and summer of 1939 the creeping *Nepeta* was pulled from the ground at a time when its blue flowers were dropping. Flowers (Fig. 1) and fine roots were severed as completely as possible. The plant was washed frequently until no dirt settled from the wash water. The plant was drained and dried and a distillation was made with steam. More plant was gathered later with flowers and some seed (Fig. 2). From this crop a small vial of seed was obtained. During the summer other crops were obtained, washed thoroughly and air-dried for approximately six months. Evidently, during this long drying process some oil was lost.

*Steam Distillation.*—The cut or crumpled plant, largely the leaves with their oil sacs (Fig. 3), was steam-distilled with a collection of 1000 cc. to 2000 cc. of distillate. At first, small droplets of a faintly yellow-colored oil appeared, that later disappeared into the water of the distillate making it faintly milky. This was shaken with redistilled chloroform, the chloroform evaporated spontaneously and the residue weighed to constant weight. The extracted water retained a faint odor of the oil, was slightly milky and the emulsion was not disturbed by any solvent, but it cleared immediately upon addition of dilute NaOH. Dilute HCl did not do this.

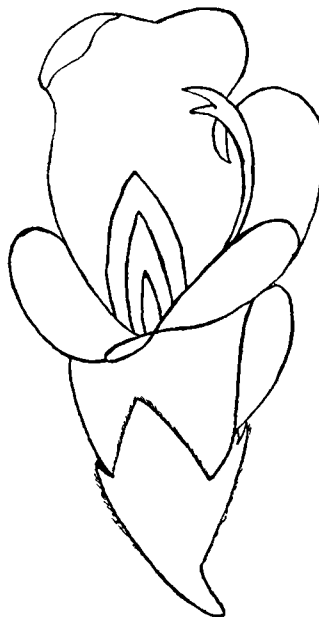


Fig. 1.—Flower.

Flower is bell-shaped, 1 cm. in length, violet-blue in color with a deep maroon-red center. Corolla is about thrice the length of the calyx. Calyx is covered with non-glandular trichomes. Anther cells diverge at right angles, each pair approximate and forming a cross.