

## A PHYTOCHEMICAL STUDY OF CANCHALAGUA PANAMENA.\*

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*Canchalagua Panamena*, very much like the *Erythraea chilensis*, Pers. is a Gentianaceæ of the species *Schultesia lisianthoides* (Paul Standley). It grows in the Savannas just outside of Panama City.

The plant, *Canchalagua Panamena*, varies from 7 cm. to 30 cm. in height, the stem is quadrangular throughout with branches opposite. The leaves are linear and opposite consisting of five nerves. The dirty pink solitary flower is about 15 mm. long and it comes out of an elongated capsule which later contains the numerous tiny seeds. All parts of the plant have a very bitter taste.

For many years the farmers in the Interior of the Republic of Panama have used *Canchalagua* as a febrifuge. The therapeutic use of the drug is that of a febrifuge in malarial fevers, as a tonic, and for regulating the liver against jaundice. The therapeutic dosage is, as a tonic, 120 cc. of a 1% infusion; as an anti-icteric and febrifuge 240 cc. of a 3% infusion. The soft extract may be used in doses from 0.20 cg. to 1 Gm. and the powdered drug from 1 Gm. to 5 Gm.

A representative sample of the entire plant was analyzed according to the U. S. P. methods with the following results:

Total ash.....	5.67%
Moisture (for non-volatile constituents).....	9.27%
Alcohol-soluble extractive.....	9.58%
Diluted alcohol-soluble extractive.....	12.50%
Water-soluble extractive.....	9.97%

A 25-Gm. sample of the air-dried drug was reduced almost to a powdered form and extracted in a Soxhlet extraction apparatus with several solvents. Ether, ethyl alcohol and water were the solvents used and in the order mentioned.

The ethereal extraction was acid to litmus paper, taste, bitterless; color, emerald green. The ether was evaporated from the extract and a solid-like mass was obtained weighing 1.31 Gm. (5.24% of the drug). The extract had a waxy appearance and tasted like wax.

The bitter alcoholic extraction gave an acid reaction with litmus paper. A few cc. of the extract showed a beautiful emerald green coloration, but a larger quantity was reddish brown. The alcoholic extract was tested for alkaloids with Mayer's reagent and picric acid giving negative results. The extract, after evaporation to a glucose consistency, weighed 5.52 Gm. (22.08% of the drug). In order to obtain a purer product, the extract was treated 3 times with a mixture of 20 cc. of ether, 5 cc. of alcohol and 15 cc. of water in a separatory funnel. The water solution from the separatory funnel was evaporated—the reddish brown jelly like substance obtained was intensely bitter, acid in reaction and insoluble in ether. This mixture was then treated with ethyl alcohol in which most of the extract dissolved. The filtrate was evaporated to determine if crystals would be formed, but unsuccessfully; a reddish brown jelly-like substance separated. This substance was intensely bitter, acid to litmus paper and when hydrolyzed with dilute hydrochloric acid reduced Fehling's solution.

The aqueous extract from the Soxhlet extractor was acid to litmus paper. Its solution tastes bitter when fresh, but on standing becomes practically bitterless. The reddish brown extract was evaporated to a solid-like consistency and weighed 3.45 Gm. (13.80% of the drug).

\* Joint Session, Scientific Section and Section on Practical Pharmacy and Dispensing, A. Ph. A., Washington meeting, 1934.

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The extract showed the absence of alkaloids. After dissolving the extract in a little distilled water and then diluting with ethyl alcohol a bitterless brown gum precipitated.

A 10 per cent infusion of the drug was acid to litmus paper and reduced Fehling's solution, showing that it contained a free acid and glucose. A few drops of Ferric Chloride solution added to the infusion gave an ink.

About 16 Gm. of cut *Canchalagua* was percolated with ethyl alcohol. A part of the percolate, after concentration, failed to reduce Fehling's solution. Then another portion of the percolate, 30 cc., after being boiled for one-half hour with 2 cc. of a 5% hydrochloric acid reduced Fehling's solution. This reaction showed the presence of a glucoside.

Several methods were employed to obtain a glucoside but without success, probably due to the small quantities of drug used. In one of the methods, the drug was boiled with milk of lime to remove the tannin. The filtrate, after evaporation to a soft extract, was digested with ethyl alcohol and filtered; to this, ether was added, but no precipitation was obtained.

#### CONCLUSIONS.

1. *Canchalagua Panamena* resembles *Erythraea chilensis* physically and therapeutically.
2. Uses of the drug: febrifuge, anti-icteric and tonic.
3. The most important constituents of the drug are: a bitter glucoside, free acid, a sugar, wax, gum, tannin and green coloring matter.

#### REFERENCES.

1. "Oficina de Farmacia de Pontes."
2. "Flora of the Panama Canal Zone," by P. Standley.
3. "Materia Medica," by D. Culbreth.
4. "Elementos de Materia Farmaceutica," de J. G. Pamo.

NOTE: I wish to thank Professor M. J. Andrews of the University of Maryland for asking me to write this paper, and also Brother Higinio and A. F. Alba, Herbalists of Colegio La Salle in Panama City, for their coöperation in the classification of the drug.

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### SOME TIMELY FORMULAS FOR THE CHIROPODIST.\*

BY ADOLPH F. MARQUIER.

It has always been a fitting effort on the part of the pharmacist to prepare for the members of the healing art, suitable medicinal preparations to meet the various conditions that present themselves daily. In the past and the present we have and are giving considerable time and thought to the human machine and its ailments but our feet only in recent years are receiving scientific consideration and in the writer's opinion there is a great future in this line of endeavor. There are at present a number of formulas in use by the practitioners of this art and the writer is taking the liberty of submitting a few of the formulas which in experience have proven some value.

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\* Section on Education and Legislation, A. PH. A., Washington meeting, 1934.