SOME PHARMACOLOGICAL STUDIES ON THE LEAVES OF CLERODENDRON INERME

A. SHARAF, A. F. ABOULEZZ, M. A. ABDUL-ALIM & N. GOMAA

Research Laboratories of Pharmacology and Natural products. National Research Centre, Cairo, U.A.R.

ABSTRACT

The pharmacological properties of Clerodendron inerme have been investigated. The alcoholic extract of the leaves and the bitter principle enormously stimulated the pregnant uterus, raised the blood pressure and moreover increased the intestinal movements. This plant possesses therefore, ebollic, hypertensive and laxative effects. The plant proved to be non toxic, since it does not produce ill effects with doses as large as 8 g/kg body weight of the powdered plant.

Little is mentioned, in the literature, about the chemical and pharmacological characteristics of Clerodendron inerme GAERTN. (Verbenaceae). In this respect, Chopra & Mayer (1956) reported that this plant is reputed to be a popular medicinal plant in India. They claimed that the juice obtained from the leaves is alterative and febrifuge, whereas, the leaves form a poultice to resolve buboes. On the other hand, the roots when boiled in oil, the liniment formed is useful in rheumatic affections. Moreover, the juice extracted from the roots possesses alterative effects. It is mentioned also that the plant has a bitter principle which can be isolated as a white amorphous substance. As no more scientific details were available in the literature, it was therefore suggested to proceed to investigate the constituents of the leaves of this plant and to examine the pharmacodynamic properties of its extracts and constituents.

EXPERIMENTS AND RESULTS

A bitter principle was isolated from the leaves of Clerodendron inerme as an amorphous water soluble (0.8%) substance which gave positive reactions with the common alkaloidal reagents (Mayer, Wagner and Dragendorff's reagents.). The plant was also found to be devoid of Clerodin, the bitter and active principle of Cl. infortunatum GAERTN. Banerjee, (1937). The unsaponifiable fraction of the fat afforded some steroidal components, but, only one of them was abundant and isolated in a crystalline form (m.p. 151—2°C). Its
chemical structure was previously discussed, ABDUL-ALIM et al., (1966) and proved to be a mixture of two isomers having molecular formulae C_{27}H_{48}O, one of them probably is cholesterol. One aliphatic alcohol C_{15}H_{30}O, and an aliphatic ketone C_{24}H_{34}O were also isolated ABDUL-ALIM. A viscous fraction of the unsaponifiable part was noticed to irritate the mucous membranes, an effect which needs further investigation chemically and pharmacologically. Six alkaloidal components were isolated by a preparative chromatogram, but none of them was crystallisable. Glucose, fructose and sucrose were also present as free sugars. The leaf ash was found to contain sulphate ions 14%, chloride ions 11%; iron as Fe_{2}O_{3} 10% and calcium ion in 2% approximately (ABDUL-ALIM).

The pharmacological testing was performed, using the watery extract of the leaves; the alcoholic extract, the bitter principle in aqueous solutions and the isolated sterol.

**Toxicity of the Water Extract**

It was found, in mice, that after subcutaneous injection with 20% water extract, only some symptoms of depression were produced but the extract was not lethal within 24 hours in doses up to 0.8 ml (i.e. 8 g powder/kg body weight).

**Effect on Plain Muscles**

*Isolated rat's intestine*

A 50% water extract of the leaves of *Cl. inerme* inhibits the intestinal motility when used in higher concentrations, meanwhile stimulation was observed by small doses. On the other hand the alcoholic extract induced a stimulating effect in all doses (e.f. Table I, fig. 1.)

![Fig. 1](image-url)

Fig. 1. Comparative effect of the watery and the alcoholic extracts on the motility of the intestine in rats. *a & b*: water extract in small and big doses respectively, *c*. Alcoholic extract.