Hutchinson[6] revised the Galegeae recognising 12 tribes. *Tephrosia* without canavanine and *Mundulea* with it fall into the same tribe Tephrosieae. Canavanine positive *Galega* was placed in the Galegeae (*s.s.*) while *Millettia* and *Wisteria* also with canavanine were included in the tribe Millettieae. Similarly canavanine positive *Gliricidia* and *Robinia* were included in the tribe Robineae. Thus, in Hutchinson's[6] revision which was based solely on morphological criteria, some correlations between the groupings and the distribution of canavanine are evident.

The distribution of canavanine was not studied earlier on a population basis. In view of the interpopulation variation discovered in the distribution of canavanine in the present study, it seems prudent that in chemosystematic investigations, irrespective of the chemical compound, the concerned taxa should be examined on the basis of a very wide population survey. Particularly, negative reports require repeated confirmation from various population samples. The presence of a chemical compound in at least one population of a species reflects a genetic potentiality for its synthesis which alone should serve as a criterion of systematic comparison as the presence or absence of the compound is dependent upon several metabolic and environmental factors[7]. Consequently quantitative differences seem to be of no significance.

Definite information on the function of canavanine in the metabolism of plants in which it occurs is lacking. The role of a nitrogen storage compound broken down during seed germination was attributed to canavanine[8]. In view of the occurrence of large amounts of storage proteins in legume seeds serving the same function[9], the restriction of canavanine to the Fabaceae and its irregular distribution showing variation even at the population levels, canavanine probably has some other role to perform.

So far the distribution of canavanine showed no correlation with any other character[3,9]. Tschiersch[10] attributed no systematic significance to canavanine. This is an extreme view as it is now clear that the distribution of canavanine has at least a limited significance.

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COSTUS MALORTIEANUS H. WENDL A NEW SOURCE FOR DIOSGENIN

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DIOSGENIN is a precursor in the synthesis of steroidal hormones and it accounts for about 50% of the total steroid drug output in the world. Diosgenin is obtained entirely from natural sources since synthetic diosgenin is not an attractive proposition commercially. Sex hormones, anabolic agents, carticosteroids and oral contraceptives are being produced in India using only diosgenin as the basic material. The use of oral contraceptives have been approved in the country in the mid-sixties and the active ingredients for these are being produced in the country, but the pill has not received much favour in India as it did in the Western countries[1].

Most of the present world supply of diosgenin is obtained from the rhizomes of *Dioscorea* species. In the present communication, the distribution of diosgenin has been studied in rhizomes, roots, stems and leaves of *Costus malortieanus* H. Wendl.

C. malortieanus was collected from the Calicut University Campus and had been grown in the Ethnobotanical Garden of this centre at Maduravoyal. Diosgenin was extracted from the dried rhizomes (underground stem), roots, aerial stems and leaves by acid hydrolysis of the plant material[2].

The plant material was cut into small pieces and dried at 80° C. The dried material was powdered to 100 mesh size. About 5 g of the plant material was taken in a 250 ml conical flask and to it was added 100 ml of 3 N HCl. This was hydrolysed in an autoclave for 1 hr at 3.87 kg/cm^2 pressure and the material was filtered through Whatman No. 1 filter paper. The crude hydrolysed residue obtained on filtration was washed with water, neutralized with lime and dried in an oven at 80° C. The dried residue was Soxhleted with hexane for 10 hr at 70° C.

The acid fraction was filtrated neutralized and the diosgenin was extracted with 100 ml of hexane. Both the extracts were pooled and diosgenin was estimated following the method of Rishi *et al*[3].

Glass plates coated with silica gel 'G' (thickness 0.25 mm) were activated at 100° C for 30 min. The extracts of the acid hydrolysed plant material (acid free) were applied 1 cm above the edge of the plates and developed in a solvent mixture of benzene and ethyl acetate (85:15). The authentic diosgenin was run for reference. Diosgenin was detected by spraying 1% vanillin-phosphoric acid reagent or conc. H_2SO_4 and the plates were heated for 10 min at 100° C. With any one of these reagents, diosgenin gave only one coloured spot. The R_f value and the colour of the spot were compared with that of the standard sample.

TABLE 1

Characteristic features of diosgenin on TLC plates. Solvent-Benzene + Ethyl acetate (85:15)

Reagent	Colour of the spot	Rf value
Conc. H_2SO_4	Greenish yellow fluorescent spot after spraying and heating at 100° C	0.43
Vanillin-phosphoric acid	Greenish yellow fluorescent spot after spraying and heating at 100° C	0.43

TABLE 2

Diosgenin content of C. malortieanus at the vegetative stage.

Plant parts	Diosgenin content μg/g in dry weight
Rhizome	396
Root	70
Stem	83
Leaf	70

The co-chromatography with the authentic diosgenin was carried out to confirm its identity. The characteristics of the diosgenin are given in table 1.

Diosgenin content was estimated in rhizomes, roots, stems and leaves of *C. malortieanus* at the vegetative stage (table 2). The diosgenin content was more in rhizome than in other parts. Root and leaf contained almost equal amounts of diosgenin. The rhizome contained nearly 5 times more of diosgenin than the root and the leaf.

Das Gupta and Pandey[4] reported the occurrence of diosgenin in the rhizome of *C. speciosus*. This prompted the authors to search for diosgenin in a related species, *C. malortieanus* extraction of diosgenin from *C. malortieanus*. It is proved for the first time that this plant is a new source of diosgenin.

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FORMATION OF ADVENTITIOUS AND FLOATING ROOTS IN COTTON UNDER WATERLOGGED CONDITION

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COTTON plants react sharply to moisture conditions in the soil. Even a day's submergence proves fatal to young seedlings and very harmful to grown up plants[1]. But in India, nowadays, a substantial cotton-growing tract, is subjected to overuse of irrigation water, poor drainage and formation of salinity or sodicity, resulting in waterlogging even with a moderate monsoon rain. This is especially true with soils having high clay percentage.