
Diosgenin a constituent of Piper betle L. root

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Diosgenin content in the roots of Piper betle was estimated by GLC and was found to be 0.08% on dry wt basis. The roots, a waste by-product obtained during replantation of the crop, can be tapped as cheaper source of diosgenin and may prove a boon for commercially limping betelvine industry.

THE betelvine (*Piper betle* L.) commonly known as 'pan' is cultivated for its leaves which are used as a masticatory. Leaf and other parts of betelvine are put to a number of medicinal uses by the tribals and aborigines of India¹⁻³. The Kondhs, Bhumijis and Hos tribes use betel roots with rice beer to prevent conception. The roots are also given with black pepper to prevent conception⁴.

Due to rapidly increasing importance of steroid sapogenins for the manufacture of cortisone and allied drugs, there is a vigorous search all over the world for vegetable raw materials which can provide cheap starting material for the synthesis of these drugs. Diosgenin is used as a principle starting material for the production of a number of steroid drugs including those used for birth control,⁵ corticosteroids have sex hormones. *Dioscorea*, *Agave* and *Solanum* spp. have been investigated chemically for the isolation and utilization of the active principles.

The leaves of *P. betel* has been extensively worked out for essential oil constituents⁶⁻⁹, however, the chemistry of the roots remains unreported. Diosgenin content in the roots, a waste by-product, was determined in order to estimate the potential of these roots as a source by gas chromatography^{10,11}.

Dried root of *Piper betle* cv. Desawari (5 g), obtained from Banthra Research Station of the Institute during replantation of the crop, was finely powdered in a grinder and hydrolysed *in situ* with 2.5N hydrochloric acid for 3 hours. The sample was then washed with water, dried and extracted with

petroleum ether (60-80°) in a Soxhlet extractor (8hr). The solvent was removed and taken up in methylene chloride (2 ml). An aliquot (1 µl) was subjected to GC analysis.

GC was carried out on a Varian Model Vista 6000 with a flame ionization detector. A stainless steel column 10' x 1/8" packed with chromosorb AWS (80-100 mesh) coated with 3% SE-30, was employed. The column temperature was 110° initially for 5 min. then programmed at the rate of 2.5°C/min upto 250°C. The flow rate of N₂ was maintained at 25 ml/min.

A linear calibration curve was obtained from GC of aliquots of a solution containing diosgenin (5 mg) in methylene chloride (1 ml). The diosgenin content was obtained from the curve. Percentage of diosgenin in the root was found to be 0.08% on dry weight basis¹¹.

Presently betel chewing is being discredited and it is essential to find out alternative uses of this crop. The roots of *P. betel* contain 0.8% diosgenin on dry weight basis which is equivalent compared to that found in the tubers of *Tamus communis* L.¹². The roots, a waste by-product, are obtained in plenty during the replantation of the crop. If properly utilized may be utilized as an additional source for the isolation of diosgenin.

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