

Hypoglycemic activity of roots of *Phyllanthus reticulatus* in alloxan induced diabetic mice

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SUMMARY

The plant *Phyllanthus reticulatus* is claimed to have hypoglycemic activity in tribal area. To validate the tribal claim, the petroleum ether and ethanolic extracts of roots of the plant orally tested at doses of 500 and 1000mg/kg for hypoglycemic effect in alloxan induces diabetic mice. It shows very good hypoglycemic activity at the dose of 1000mg/kg. The phytochemical screening of the residues revealed the presence of terpenoids glycosides, protein, carbohydrates and absence of alkaloids and steroids.

Key words: *Phyllanthus reticulatus*, Hypoglycemic, Diabetes.

Diabetes is one of the most prevalent chronic diseases in the world affecting nearly 25% of the population G.W. Cline et al., (1991). For a long time, diabetics have been treated with several medicinal plants or their extracts based on the folklore medicine F. M. Akhtar et al., (1984) Synthetic hypoglycemic agents can produce serious side effects and in addition, they are not suitable for use during pregnancy J.Larner (1985). Therefore, the search for more effective and safer hypoglycemic agents has continued to be an important area of active research. Furthermore, after the recommendation made by WHO on diabetes mellitus, investigation on hypoglycemic agent from medicinal plants have been more important The WHO, (1980).

Phyllanthus reticulatus (Euphorbiaceae) is a large straggling or climbing shrub growing from 8 to 10 ft. in height K.R.Kirtikar, (1988). The roots of the plant contain epifriedenol, taraxerone, betulin, b-sitosterol, 21a-hydroxyfriedelan-3-one, glochidonol, octacosanol, 21a-Hydroxyfriedel-4-(23)-en-3-one, friedelin, taraxyl acetate etc. K. Joshi et al., (1981), W. Hui et al., (1976). The plant is used for variety of ailments, including smallpox, syphilis, asthma, diarrhoea, bleeding from gums etc. The Wealth of India, (2005), K. M. Nadkarni, (1994). It is claimed to have hypoglycemic activity in tribal area. The present study is carried out to prove ethanopaharmacological claim of the plant.

MATERIALS AND METHODS

Roots of *Phyllanthus reticulatus* were collected in October- December 2002 from Piperi, Pune. The plant material was positively identified and confirmed by taxonomist the Agharkar Research Institute, Pune.

Phytochemical Studies:

Roots were shade dried, powdered and Soxhlet-extracted successively with petroleum ether and ethanol. The extracts were concentrated in vacuo giving two brownish green residues (Petroleum ether root extract (PER), yield: 1.7% w/w and ethanolic root extract (ER), yield: 5.55% w/w). The phytochemical screening of the residues revealed the presence of terpenoids glycosides, protein, carbohydrates and absence of alkaloids and steroids.

Pharmacological Studies:

Albino mice (weighing 25-30 g) were used for investigation. The animals were housed under standard environment condition of temperature (21 ± 2 °C), humidity ($51\pm 10\%$) and a 12-h light-dark cycles with standard pellet diet (Amrut Lab.) and water ad libitum.

Mice were diabetic by a single rapid injection of alloxan monohydrate (i.v.) in a dose of 70 mg/kg. After 48 hours of administration, it produced diabetes by selectively destroying cells of islets of Langerhans. After that hypoglycemia was confirmed by Diastrix strips. Blood samples were drawn by retro-orbital puncture and plasma glucose levels were estimated by Glucose Oxidase Peroxidase (GOD POD) method to confirm diabetes S.Sreemantula et al., (2005).

Mice having plasma glucose level between 200 to 400 mg/dl were divided into six groups of six animals each and treated orally for study as

Group 1 Control [Diabetic given only vehicle (Twin 80, 5 % w/v)]

Group 2 Diabetic treated with PER (500mg/kg/day)

Group 3 Diabetic treated with PER (1000mg/kg/day)

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