

PRELIMINARY PHYTOCHEMICAL STUDIES ON THE ROOTS OF *COCCULUS HIRSUTUS*, LINN.

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ABSTRACT: The roots of *Cocculus hirsutus* (Linn) Diels was analyzed for preliminary phytochemical studies including physical constant (total ash, acid soluble and insoluble ash and moisture content), extractive values in different solvents (petroleum ether, benzene, chloroform, methanol and water), and phytochemical tests. The plant is well reputed in traditional system of medicine, present studies will help in further validation and standardization of the plant.

KEY WORDS: *Cocculus hirsutus*, Menispermaceae.

INTRODUCTION

Cocculus hirsutus^{1,2} (Linn) Diels, belonging to the family Menispermaceae and commonly known as Jalajmini, is a climbing shrub found in the tropical and subtropical parts of India, China, Africa, Arabia and Ceylon³. Ayurveda describes the uses of roots to cure "Kapha" and "Vata", lessen bile and burning sensation. It enriches the blood and is useful in urethral discharges. It is also used as refrigerant, laxative, in chronic rheumatism, venereal diseases, fever and syphilitic cachexia⁴. Alcoholic extract of the roots have shown significant analgesic, anti-inflammatory, antimicrobial, hypoglycemic and cardiogenic effect^{5, 6}. A number of phytoconstituents including alkaloids and sterols have been reported i.e. trilobine, isotriloquine, colcaurine, magnoflorine, hirsutidin, jantine-N-oxide, 2-sitosterol, ginnol, a monomethyl ether of inositol, hirsutidine from the plant.

MATERIAL AND METHODS^{7,8}

Collection, Identification and powdering

The plant *Cocculus hirsutus* was collected from the VNS campus, Neelbad &

Nathubarkheda, Bhopal (m>P.) in the month of October. Its Identity was confirmed by matching with specimen herbarium. The roots of *Cocculus hirsutus* were washed; shade dried, coarsely powdered and kept in airtight container for further studies.

Determination of Extractive values

The weighed (20gm) amount of the powdered drug (roots of *Cocculus hirsutus*) was macerated with the several solvents like petroleum ether, benzene, chloroform, methanol and water separately for 24 hours and filtered. The solvent was removed under reduced pressure and percent extractive values in different solvent were calculated as w/w with reference to the air dried drug.

Determination of Ash value Total Ash

Accurately weighed powdered drug (5gm) was taken in a silicon dish previously ignited & weighed. The powdered drug scattered in a fine even layer on the bottoms of the dish, incinerated by gradually

increasing the heat, not exceeding dull red that until free from carbon, kept in desiccator for cooling and weighed.

Acid insoluble and acid soluble Ash

Ash obtained by above was boiled with 25ml of 2M hydrochloric acid for 5 minutes. Insoluble matter was collected in gooch crucible, washed with hot water ignited and weighed. Percentage of acid insoluble ash and acid soluble ash was calculated with reference to the air dried drug.

Moisture Content

Air dried powdered drug (5gm) was kept in I.R. moisture balance and dried upto two constant reading. Percent moisture content was calculated by following **formula-**

Percentage Moisture= $\frac{t1-t2}{t1} \times 100$

t1=initial weight

t2=weight after removal of moisture

Bulk Density and Angle of Repose

Bulk density and angle of repose were calculated for dried powdered drug using following formula –

Bulk Density= $\frac{\text{Mass of Powder}}{\text{Bulk Volume}}$

Angle of Repose $\tan = \frac{\text{Height of the Pile}}{\text{Radius of the Pile}}$

Qualitative Chemical Tests⁹

Extracts obtained using various solvents were subjected to qualitative chemical tests including test for lipids, alkaloids, glycosides, tannins, volatile oils and resins.

RESULTS AND DISCUSSION

The roots of *Cocculus hirsutus* were studied for preliminary phytochemical studied and the results are shown in table 1 and 2. The roots have shown different extractive values, in petroleum ether as 1.23 ± 0.02 % w/w, in benzene 6.55 ± 0.24 % w/w and with water 7.55 ± 0.98 % w/w of powdered drug. Presence of total ash was calculated as 4.12 ± 0.01 % w/w while acid insoluble and acid soluble were analyzed as 2.54 ± 0.02 % w/w and 1.58 ± 0.01 % w/w. The percent moisture content in the powdered root was calculated as 5.14 ± 0.02 % w/w. To determine powder characters of 36 mesh size, angle of repose and bulk density were also calculated, the drug has shown 29.05 ± 0.002 as angle of repose and 0.21 ± 0.04 g/P.C. bulk density.

Qualitative chemical test in the different extracts of *Cocculus hirsutus* were carried out and the tests have shown the presence of lipids in petroleum ether extract. Alkloids were present in chloroform, benzene, methanolic and water extract. Moreover the presence of tannins was observed in methanolic and water extract while the presence of resins was confirmed in chloroform, benzene and methanolic extract. Absence of glycoside, volatile oil, gums and mucilage in all the selected extracts was also found, the plant is well established for the treatment of various common diseases in traditional and folk medicines. Although these studies are preliminary, these parameters will help in further standardization and validation of *Cocculus hirsutus*.

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Table – 1
Preliminary Phytochemical studies on the roots of *Cocculus hirsutus* .

S.N.	Parameters	Percentage w/w mean \pm SD
1.	Extractive values with Petroleum ether Benzene Chloroform Methanol Water	 1.23 \pm 0.02 6.55 \pm 0.06 9.46 \pm 0.08 6.75 \pm 0.24 7.55 \pm 0.98
2.	Ash values Total ash Acid insoluble ash Acid soluble ash	 4.12 \pm 0.01 2.54 \pm 0.02 1.56 \pm 0.01
3.	Moisture Content (36 mesh size)	5.14 \pm 0.03
4.	Angle of Repose (36 mesh size)	29.05 \pm 0.002
5.	Bulk Density	0.21 \pm 0.04 g/P.C

Table -2
Qualitative chemical tests on the roots of *Cocculus hirsutus*.

S. No.	Tests	Pet.Ether ext	Chloroform	Benzene	Methanolic	Water
1.	Lipids	+	-	-	-	-
2.	Alkaloids	-	+	+	+	+
3.	Glycosides	-	-	-	-	-
4.	Tannins	-	-	-	+	+
5.	Resins	-	+	+	+	-
6.	Volatile Oil	-	-	-	-	-
7.	Gums and Mucilage	-	-	-	-	-

+ = Positive, - = Negative