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EXTRACTION PHYTOCHEMICAL SCREENING OF SUCCESSIVELY EXTRACTED *OPERCULINA TURPETHUM* PLANT EXTRACTS

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ABSTRACT

A plant in the morning glory family, *Operculina turpethum* (syn. *Ipomoea turpethum*) is known commonly as turpeth. *Operculina turpethum* L. is a highly perennial medicinal plant of the family Convolvulaceae. Plant kingdom harbours an inexhaustible source of bioactive ingredients valuable in the management of many intractable diseases. Phytochemical approaches have been influential in the quest for pharmaceutical product raw materials and tools. In fact, the active ingredients of herbal medicines have the benefits of mixing them with several other compounds which tend to be inert. These complementary components however give the plant as a whole a much higher level of safety and efficiency than its isolated and pure active components. The usage of medicinal plants in the diagnosis of human disease had its origins in ancient periods. A broad variety of sections of medicinal plants are used as raw products for extract, and they have varying medicinal properties. The objective of the study was to undertake qualitative phytochemical analysis of flower of *Operculina turpethum*, a traditional herb used against several diseases.

Keywords: *Operculina turpethum*, extraction, phytochemical screening, qualitative study.

INTRODUCTION

Plants have been used globally as medications and treatments for the treatment of different diseases because they have the ability to generate novel medicines that are of considerable value to humans (Chopra et al., 1999). The quest for new biologically active concepts in higher plants has several strategies. Natural flora has gained its attention in the treatment of common cold to dreadful diseases viz., AIDS, Cancer, etc, such plants are called as medicinal plants which have curative properties due to the presence of various complex chemical

substances of different composition, viz., grouped as alkaloids, glycosides, corticosteroids, terpenoids, isoflavanoids, steroids etc. Product based on plants have been in use for medical or other uses right since the beginning of civilisation, as the ancient world 's conventional therapies were all centered on natural ingredients (Kirtikar and Basu 1992). *Operculina turpethum* (syn. *Ipomoea turpethum*) (L.) (Family: Convolvulaceae) is commonly known as Dudh kalmi in Bangladesh, Sanskrit-Kalameshi, Rechani, Kutarana, Bhandi, English-Turpeth root, Indian jalap. *Operculina turpethum* has been used for centuries as a medicinal plant in ayurvedic medicines because of its resin content (10 %) known as turpethin, jalapine and convolvuline glycoside and essential oil contents. *Operculina turpethum* is perennial plant with milky juice, root are long, slender, fleshy, much branched. Stems are very long, twining and much twisted together, angled and winged, pubescent, tough and brown when old (Nadkarni, 2007; Kirtikar KR, Basu, 2005; Sharma and Singh, 2012; Kohli *et al.*, 2010).

In Ayurveda, root of *Operculina turpethum* is used internally to treat fevers, anorexia, edema, anemia, ascites constipation, hepato splenomegaly, hepatitis, intoxication, abdominal tumors, ulcers, wounds, worm infestation, pruritis and other skin disorders (Government of India, 2001).

Root is also administered to treat obesity, hemorrhoids, cough, asthma, (Sharma and Vidnyana 2006), dyspepsia, flatulence, paralysis, gout, rheumatism, melancholia, scorpion sting, and snake bites. The paste of root powder of *Operculina turpethum* is used topically to treat vitiligo and other skin disorders, alopecia, cervical lymphadenitis, hemorrhoids, fistulas, ulcers, and (Murty, 2008) Oil extracted from the root bark of Trivrit is used in skin diseases of a scaly nature (Alam *et al.*, 2010). A processed ghee with *Operculina turpethum* or fresh juice of *Operculina turpethum* leaves is dropped into the eyes to treat diseases like corneal opacity or ulcer and conjunctivitis. Root powder of Trivrit mixed with ghee and honey is also used to treat hematemesis, tuberculosis and herpes.

Root bark, root stem and leaves of this herb have high medicinal value (Vaidya and Aadarsha, 2005). It is one of the plants mentioned in the literature having claims of activity against liver disorders (Jain and Saxena, 1987). It also has anthelmintic, expectorant, antipyretic, analgesic, anti-inflammatory and purgative properties. It contains a wide variety of phyto constituents,

which are useful in treatment of different ailments and includes glycosidic resin, coumarins, beta-sitosterol, and essential oils (Deeaph and Malti, 1994).

Materials and Method

Plant material

The plant *Operculina turpethum* (flower) was collected from local area of Bhopal (M.P.). The flowers were washed with sterile distilled water to remove the adhering dust particles and other unwanted materials. The plant material was air dried under room temperature. The dried plant samples were cut and grinded to make it in powder form.The powdered samples were stored in clean, dry and sterile container for further use.

Chemical reagents

All the chemicals used in this study were obtained from Hi Media Laboratories Pvt. Ltd. Mumbai, India), SD Fine- Chem. Ltd. (Mumbai, India) and SRL Pvt. Ltd. (Mumbai, India).All the chemicals used in this study were of analytical grade.

Extraction procedure

The shade dried material was coarsely powdered and subjected to extraction with petroleum ether by maceration. The extraction was continued till the defatting of the material had taken place. 45gm of dried plant material were exhaustively extracted with four solvents of different polarity viz water, ethanol, ethyl acetate and chloroform using maceration method. The extracts were evaporated above their boiling points and stored in an air tight container free from any contamination until it was used (Mukherjee, 2007; Khandelwal, 2005; Kokate, 1994).

4.3 Determination of extractive value (% yield)

The % yield of yield of each extract was calculated by using formula:

$$\textbf{percentage Yield} = \frac{\text{Weight of extract}}{\text{Weight of powdered drug taken}}$$

Qualitative phytochemical analysis of plant extract

Operculina turpethum extracts obtained was subjected to the preliminary phytochemical analysis following standard methods. The extract was screened to identify the presence or absence of various active principles like phenolic compounds, carbohydrates, flavonoids, glycosides, saponins, alkaloids, protein and tannins (Roopashree *et al.*, 2008; Obasi *et al.*, 2010; Audu *et al.*, 2007).

Result and Discussion

Yield of the Extracts

The percentage of the yield of different extracts of *O. turpethum* was presented in Table 1.

From Table 1, maximum yield was found to be ethanolic extract (EE), followed by aqueous extracts and ethyl acetate

Preliminary Phytochemical Analysis

The results of phytochemical investigation of various extracts are represented in Table 2.

Table 1: Extractive values of *Operculina turpethum* (flower)

S. No.	Solvents	Colour	Physical nature	% Yield (W/W)
1	Chloroform	Sticky green	Solid	2.36
2	Ethyl acetate	Dark brown	Solid	2.78
3	Ethanol	Brown	Solid	4.67
4	Aqueous	Dark brown	Solid	5.11

Table 2: Result of Phytochemical screening of *Operculina turpethum* (flower)

S. No.	**Constituents**	**Chloroform extract**	**Ethyl acetate extract**	**Ethanol extract**	**Aqueous extract**
1.	**Alkaloids** Hager's Test:	-ve	-ve	+ve	+ve
2.	**Glycosides** Legal's Test:	+ve	-ve	+ve	+ve
3.	**Flavonoids** Lead acetate Test:	-ve	+ve	+ve	+ve
4.	**Diterpenes** Copper acetate Test:	-ve	-ve	-ve	-ve
5.	**Phenol** Ferric Chloride Test:	-ve	-ve	-ve	-ve
6.	**Proteins** Xanthoproteic Test:	-ve	-ve	-ve	+ve
7.	**Carbohydrate** Fehling's Test:	-ve	+ve	+ve	+ve
8.	**Saponins** Froth Test:	-ve	+ve	+ve	+ve
9.	**Tannins** Gelatin test:	-ve	-ve	-ve	-ve

Conclusion

In the present investigation, these studies revealed the presence of various important bioactive compounds and proved that the plant flowers are also medicinally important. These results may help in standardization, identification and in carrying out further research in *Operculina turpethum* flower based drugs which are used in Ayurveda and modern pharmacopoeia

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