



PHARMACOGNOSTIC PARAMETERS AND PHYTOCHEMICAL SCREENING OF *CONVOLVULUS ARVENSIS* LINN.

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ABSTRACT

In this study the aerial parts of *Convolvulus arvensis* Linn. (Convolvulaceae) were collected and identified. Various Pharmacognostic parameters needed for evaluation are performed, which might be helpful in herbal medicines in future. The phytochemical screening revealed the presence of Flavonoids, tannins, saponins, and glycosides with a very high content in alcohol extract. The concentration of the phytochemical constituents were in the order of alcohol > CHCl₃ > Pet.ether. The result of this study validates the use of plant in ethnomedicine and could provide a lead in the isolation of activity guided phytoconstituents.

Key words: *Convolvulus arvensis*, Pharmacognostic parameters, anti-angiogenesis

INTRODUCTION

Convolvulus is a genus of about 250 species of flowering plants¹. Many of the species are problematic weeds, which can swamp other more valuable plants by climbing over them, but some are also deliberately grown for their attractive flowers. *Convolvulus* species are used as food plants by the larvae of some Lepidoptera species². Previous preliminary studies have revealed that different members of the family of Convolvulaceae³ possess Cytotoxic effects against a number of tumor cells⁴. *C.arvensis* is one of its species⁵. *Convolvulus arvensis* Linn. also known as wild morning glory is a creeping weed widely distributed in Middle East. It is commonly known as European Bindweed⁶, bindweed, creeping jenny⁷ and devil's guts. In India it is found growing widely in waste lands and known as 'Hirankhudi' in Hindi. The plant is herbaceous, dicotyledonous, persistent, annual or perennial vine of 2m in height of the morning-glory family (*Convolvulaceae*) which spreads by rhizome and seed⁷. The leaf is ovate-oblong to lanceolate, 1.5 cm -5 cm long and 1-3 cm wide, with an acute or mucronate apex and hastate, saggitate and cordate base. Capsules are ovoid to subglobose, 5-8 mm and glabrous. Seeds are four or fewer obovate to broadly obovate in outline, (2.5)3.0-4.5 mm long, 2.0-3.0(3.5) mm wide, 2-3 mm thick, colour, dark brown to black, and have rough surfaces. The flowers have five fused petals forming a 2-2.5cm long funnel-like corolla. Filaments to 1 cm flattened and broad at base. Style white, glabrous 1cm long. Stigma 2-3 to 4cm long, white to pale yellow in colour. Ovary subtended by orange nectar ring. Ovary white, glabrous to pubescent, superior, 2mm long, 2-locular. Sepals 5, green and often with tiny brownish tip, glabrous, 4 mm long, and 2.1 mm broad.

Traditionally the plant is used to treat skin ulcers, reducing wounds, rheumatic and painful joints, inflammation and swelling⁸. A purified water extract of leaves of bindweed is used to inhibit the growth of tumour cells, growth of blood vessels and enhance immune function^{10,11,12}. *Convolvulus arvensis* is also used as antidandruff and for skin diseases¹³. Aerial parts of *C.arvensis* is used as anti-spasmodic, wound healing, laxative and antihaemorrhagic¹⁴, anti-angiogenetic effect^{15,16,17,18,19,20}. It was also described as a purgative and fever-reducer. Phytochemical studies on this plant had been limited to the detection of Saponins²¹, Flavonoids and caffeic

acid²² alkaloids²³ and lipids²⁴ and δ -amino levulinic acid. Aerial parts indicated the presence of polyphenolic compounds²⁵, alkanes, alkanols, α - amyrin, campesterol, stigmasterol and sitosterol. Field bindweed was found to contain the tropane alkaloids tropine, pseudotropine, and tropinine and the pyrrolidine alkaloids cuscohygrine²⁶ and hygrine¹⁷.

MATERIALS & METHOD

Plant material

The aerial parts of the plant were collected from the waste land of Amritsar region in the month of October- November and authenticated by Dr. B.K. Kapahi, Taxonomist, Department of Botany, IIM, Jammu. A voucher specimen was retained and deposited at the crude drug repository of the herbarium of IIM Jammu. (Vide CDR accession No. 21583).

Preparation of plant extracts (aerial parts)

The Plant material was dried in shade and crushed to obtain coarse powder of aerial parts excluding flowers. The dried powdered material was initially defatted with pet ether (60-80) in Soxhlet apparatus for 48 hrs according to successive solvent extraction. The pet ether extract was dried and collected. The marc was air dried and successively exhausted with CHCl₃ and alcohol each for 48 hrs. The extracts were filtered while hot and the solutions were concentrated using water bath and % age yield of the extracts were determined.. The extracts were stored in different containers apparently labeled and kept in poly-thene bags before analysis. Preliminary Phytochemical screening was carried out by using standard procedures described by Kokate²⁷ & Harborne²⁸.

Chemicals & Instruments

Solvents: Viz Pet ether (60-80), Chloroform, Alcohol and instruments like Muffle Furnance, water bath and hot air oven and apparatus like crucibles and other common items of glassware were procured from Sanjay Biological, Amritsar, India.

Physico-Chemical analysis

Physico-chemical analysis i.e. % age ash values were performed according to official methods prescribed²⁹ and the WHO guidelines on the quality control methods for medicinal plant materials³⁰.

RESULTS & DISCUSSION

Physico- chemical studies

Ash values of the drug give an idea about the presence of inorganic matter and other impurities present along with the drug. The value of total ash, water soluble ash, acid insoluble ash are carried out (table-1). Extractive values are preliminary useful form the determination of exhausted or adulterated drugs. The alcohol soluble, ether soluble, CHCl₃ extractive values have

been tabulated (table2). Preliminary Phytochemical Screening carried out on powdered aerial parts of *Convolvulus arvensis* indicate and presence of flavonoids, tannins, saponins, and glycosides, steroids, mucilage. (Table 3)

Table 1: Ash value of aerial parts of *Convolvulus arvensis*

Parameter	Value (%w/w)
Total Ash	6.1
Acid insoluble ash	4.52
Water soluble ash	5.85

Table 2: Extractive values of powdered aerial parts of *Convolvulus arvensis*

Extracts	Values (%w/w)
Alcohol	12.19
Ether soluble	5
CHCl ₃ soluble	8

Table 3: Phytochemical screening of powdered aerial parts of *Convolvulus arvensis*

Tests	Pet ether	CHCl ₃	Alcohol
Alkaloids	-	-	-
Flavonoids	-	+	+
Glycosides	-	-	+
Tannins	-	-	+
Steroids	+	+	-
Saponins	-	+	+
Mucilage	+	+	+

CONCLUSION

In conclusion, it is clear that weeds are not only waste plants but some weeds like *Convolvulus arvensis* also possess important medicinal profiles. The plant has been used in traditional medicine to treat a wide range of disease. Moreover it contains several therapeutically active constituents. So there is way ahead to isolate activity related phytoconstituents.

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