Evaluation of Phytochemical Screening and Thrombolytic Activity of Hydro Alcoholic Extract of Solanum Torvum Fruits

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***Abstract*—Pharmacognosy is the study of medicines derived from natural sources.The American society of pharmacognosy defines pharmacognosy as the study of the physical, chemical, biochemical and biological properties of drugs, drug substances or potential drugs or drug substances of natural origin as well as the search for new drugs from natural sources [1]. Portulaca oleracea is currently being used in the treatment of various disease conditions without standardization. The whole plant is having characteristic odour, agreeable taste and length varying from 1 to 1.2 meters.Phytochemical screening of three extracts (Ethanol extract, Hexane, Ethyl acetate fractions) of plant has been summarized in Table 1. The powdered plant of preliminary phytochemical screening mainly revealed the presence of alkaloids, carbohydrates, flavonoids, aminoacids, proteins, steroids, saponins, fixed oils, tannins and phenolic compound.Pharmacognostic constants for entire plant, the diagnostic microscopic features and the numerical standards reported in this work could be useful for the compilation of a suitable active principles from Portulaca oleracea Linn.Our results allow us to conclude that the Ethanolic extract, Hexane and Ethyl acetate fractions given positive reaction for phytochemical tests indicating the presence of carbohydrates, Flavonoids, and Steroids.**

***Index Terms*—Hexane,Portulaca oleracea,Ethyl acetate,carbohydrates, Flavonoids, and Steroids.**

I. INTRODUCTION

Pharmacognosy is the study of medicines derived from natural sources.The American society of pharmacognosy defines pharmacognosy as the study of the physical, chemical, biochemical and biological properties of drugs, drug substances or potential drugs or drug substances of natural origin as well as the search for new drugs from natural sources [1].

According to the American Society of Pharmacognosy, pharmacognosy is "the study of natural product molecules (typically secondary metabolites) that are useful for their medicinal, ecological, gustatory, or other functional properties."[2]

However, many herbalists believe that the active ingredient in a plant is the plant itself.[3]

II. LITERATURE REVIEW

- It is fascinating that a plant so prevalent around the world has achieved almost identical recognition in each culture for its benefits.
- The use of this plant as a vegetable, spice and medicinal plant has been known since the times of the ancient Egyptians.
- Garden Purslain (being used as a sallad herb) is so well known that it needs no description; I shall therefore only speak of its virtues as follows.

Past work reported on Portulaca Species

The whole plant is considered Antiphlogistic (takes the heat out), Bactericide, Antidiabetic, Anaphrodisiac (opposite to aphrodisiac), emollient, calmative, diuretic, a refreshing agent [6] .

The herb is used as a gastric sedative, to allay excessive heat and pain, and applied to the eyes, to remove inflammation [7].

The entire plant is used as an Antibacterial, Anti-inflammatory and Anthelmintic.
It is used in treating bacillary dysentery and dysuria, Poultices of fresh leaves are used to treat mastitis, boils and impetigo [8].
Herb is chiefly valued as a refrigerant and alterative pot herb, particularly useful as an article of diet in scurvy and liver diseases [9].
It acts as a refrigerant and alterative in scurvy and liver diseases [10].

III. OBJECTIVE OF PRESENT STUDY

- The present study was designed to
- Identify the Morphological, Microscopical characters of plant Portulaca oleracea.
- It also includes the prepararion and chemical characterisation of Ethanolic extract, Hexane, Ethyl acetate fractions of the plant extract.
- To investigate the Anti-bacterial activity of the Ethanolic extract of Portulaca oleracea.

PLANT REVIEW

- The name Portulaca is thought to be derived from the Latin ‘porto’ to carry and ‘lac’ meaning milk, since the plant contains a milky juice Plant Title: Portulaca oleracea Linn.
- Botanical name: Portulaca oleracea Linn.
- Vernacular names:
- Telugu: Peda pavilikura
- Hindi: Kursa
- Sanskrit: Brihalloni, Gholika, Lona, Lonamla, Loni, Lonika, Lunia [8].
- Tamil: Karikkirai, Parupukkirai, Passalakkirai, Pulichchankirai, Pulikkirai.
- English: Garden purslane, pigweed

Portulaca oleracea Linn.

Dried whole plant of Portulaca oleracea Linn.

Taxonomy

- ✓ Kingdom: Plantae – Plants
- ✓ Subkingdom: Tracheobionta-- vascular plants
- ✓ Superdivision: Spermatophyta – Seed plants
- ✓ Division: Magnoliophyta – Flowering plants

- ✓ Class: Magnoliopsida – Dicotyledons
- ✓ Subclass: Caryophyllidae
- ✓ Order : Caryophyllales
- ✓ Family: Portulacaceae
- ✓ Genus: Portulaca L. – purslane
- ✓ Species: Portulaca oleracea L. – little hog weed
- ✓ Common name: Pig weed, Perpine
- ✓ Botanical name: Portulaca oleracea

SOXHELET EXTRACTION

- ✧ Weight of powder used for extraction with methanol: 350 gms
- ✧ Sieve used: No.12
- ✧ Characteristics of Methanolic extracts:
- ✧ Colour: Greenish brown
- ✧ Yield of Methanolic extract: 25 gms
- ✧ Characteristics of Hexane soluble fraction:
- ✧ Colour: Greenish
- ✧ Yield: 3 gms
- ✧ Characteristics of Ethyl acetate fraction:
- ✧ Colour: Reddish brown
- ✧ Yield: 8 gms

Chemical tests for the Ethanolic extract and its fractions

NAME OF THE TEST	ETHANC EXTRACT	HEXANE FRACTION	ETHYL ACETATE FRACTION
Triterpenes:			-
A) Salkowski Test:	+	+	-
B)Liebermann-	+	+	-
Buchard's Test:	+	+	-
C)Ischugajiu Test:	+	+	
D)Brickorn and Brinar Test :			
Saponins:			
A)Foam Test:	+	-	+
B)Haemolysis Test:	+	-	+
Alkaloids:			
A)Mayer's Test:	+	-	+
B)Dragendroff's Test:	+	-	+
C)Wagner's Test:	+	-	+
D)Hager's Test:	+	-	+
Tannins:			
A)Ferric Chloride	+	-	+
Test:	+	-	+
B)Gelatine Test:			
Carbohydrates:			
A)Fehling's Test:	+	-	+
B)Molisch's Test:	+	-	+
C)Barfoed's Test:	+	-	+
D)Benedict's Test:	+	-	+
Flavonoids:			
A)Shinoda Test:	+	-	+
B)Ferric chloride Test	+	-	+
C)Lead Acetate Test:	+	-	+
D)ZinHcl reduction Test:	+	-	+

Glycosides: Baljet Test: B) Legal Test: C) Keller- Killiani Test:	 - - -	 - - -	 - - -

ANTI-BACTERIAL ACTIVITY

Determination of Antibacterial activity by following methods

1) Disc diffusion method

2) Agar cup method

Preparation of peptone water liquid media

Ingredients	Quantity
Peptone	10 gm
Beef extract	10 gm
Sodium chloride	5 gm
Distilled water	Q.S.1000 ml

Preparation of assay medium

Ingredients	Quantity
Peptone	6.0 gm
Casein hydroxylate of Soyabean	4.0 gm
Yeast extract	3.0 gm
Beef extract	1.5 gm
Dextrose (dehydrated)	1.0 gm
Agar	15.0 gm
Distilled water	Q.S.1000 ml

ORGANISMS USED:

- Gram positive Bacteria:
- Bacillus subtilis
- Gram negative bacteria:
- Escherichia coli

ANTI-BACTERIAL ACTIVITY

COMPOUND CODE	ZONE OF INHIBITION (mm)	
	Bacillus subtilis (50μg/ml)	*Escheresia coli* (50 μg/ml)
Standard	10	-
Standard	-	08
Control	-	-
POEE (20 μl/ ml)	04	02
POEE (60 μl/ ml)	08	06
POEE (80 μl/ ml)	10	09

IV. RESULTS AND DISCUSSION

- ✓ Portulaca oleracea is currently being used in the treatment of various disease conditions without standardization.
- ✓ The whole plant is having characteristic odour, agreeable taste and length varying from 1 to 1.2 meters.
- ✓ Phytochemical screening of three extracts (Ethanol extract, Hexane, Ethyl acetate

fractions) of plant has been summarized in Table 1.

- ✓ The powdered plant of preliminary phytochemical screening mainly revealed the presence of alkaloids, carbohydrates, flavonoids, aminoacids, proteins, steroids, saponins, fixed oils, tannins and phenolic compound.
- ✓ The screening results revealed that the POEE (80µl/ ml) showed similar zone of inhibition as that of standard drug for gm+ve bacteria.
- ✓ Whereas the same concentration showed less activity than that of standard drug for gm-ve bacteria.
- ✓ While the other concentration of POEE showed moderate to considerable antibacterial activity against both gm+ve and gm-ve bacteria.

V. CONCLUSION

- ✓ Pharmacognostic constants for entire plant, the diagnostic microscopic features and the numerical standards reported in this work could be useful for the compilation of a suitable active principle from Portulaca oleracea Linn.
- ✓ Our results allow us to conclude that the Ethanolic extract, Hexane and Ethyl acetate fractions given positive reaction for phytochemical tests indicating the presence of carbohydrates, Flavonoids, and Steroids.
- ✓ The crude extract of plant exhibited significant monograph for its proper identification. Further studies are required to isolate and characterize the antibacterial activity and properties that support folkloric use in the treatment of some diseases as broad spectrum antibacter ial agent.

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