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PHYTOCHEMICAL AND ANTIBACTERIAL EFFECT OF *PEDALIUM MUREX (L)*

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ABSTRACT

The present paper deals with the phytochemical and antimicrobial screening of *Pedalium murex(L)* an important medicinal plant. The study involves the preliminary screening of secondary metabolites from the Flower of *Pedalium murex(L).*The antibacterial activity was performed against a few pathogens *Escherichia coli* ,S*taphylococcus aureus*, and *Pseudomonas aeruginosa.* The generated data has provided the basis for its wide use as the therapeutic both in traditional and folk medicine.

INTRODUCTION

According to the World Health Organization (WHO) about 65–80% of the world'spopulation in developing countries depends essentially on plants for their primary healthcaredue to poverty and lack of access to modern medicine.The Traditional systems of themedicine like Chinese, Ayurvedic, Unani and Sidha are very effective particularly in ruralareas for the treatment of various ailments Sharma et al., (2010). Herbal medicine is the oldest form of healthcare known to mankind. Herbs had been used by all cultures throughout history. It was an integral part of the development of modern civilization**Daly *et al.*, (2000)**.*Pedalium murex(P. murex)* is a member of the sesame family, Pedaliaceae. It is found in different parts of the world such as tropical Africa, Srilanka, India, Mexico and Pakistan[**Shukla et al., 1983).***Pedalium murex* is demulcent, diuretic and also found to be useful for the treatment of disorders of urinary systems such as gonorrhea, dysuria, incontinence of urine, etc.,**Chopra et al.,(1999**)It helps in regularizing the digestive activities. It also regulates the circulatory system and strengthens the heart muscles. It helps in cleaning the respiratory tract. It provides strength to the uterus. It also relives from the pain and inflammation when applied on the affected part.

MATERIALS AND METHODS

Collection of Plant Material

The healthy plant samples of *Pedalium murex(L*) was collected from Trichy.The collectedplant materials were transported to the laboratory.

Preparation of Leaf Powder

The *Pedalium murex(L*)was collected,washed and cut into small pieces and dried at roomtemperature for two weeks and made in to powder for further analysis.

Extraction of Plant Material

Aqueous and alcoholic extracts were prepared according to the methodology of indianpharmacopoeia . The shady dried plants materials were subjected topulverization to get coarse powder. The coarse powder material was subjected to soxhletextraction separately and successively with alcohol and distilled water. These extracts wereconcentrated to dryness in flash evaporator under reduced pressure and controlledtemperature (40-50°c).

Micro organisms and culture media

The bacterial cultures such as *Escherichia coli* ,S*taphylococcus aureus*, and *Pseudomonas aeruginosa*.sp were obtained from doctor diagnostic center,Trichy. The bacterial strains were

maintained on nutrient agar mediam.The antibacterialactivity studied by agar well diffusion method.

RESULT AND DISCUSSION

Table 1: Preliminary phytochemical studies on *Pedalium murex(L)*

Organisms	**Diameter of inhibition zone in cm (Mean#)**	
	Aqueous *Extract of Pedalium murex(L)*	**Standard antibiotics***
Escherichia coli	2. ± 0.72	2.0
Staphylococcus aureus	0.8± 0.51	2.2
Pseudomonas aeruginosa	2.4 ± 0.9	2.5

Phytochemical constituents	**Result of qualitative tests**	
	Aqueous extract	**Ethanolic Extract**
Alkaloids	-	-
Terpenoids	-	-
Steroids	-	-
Coumarins	+	-
Tannins	+	+
Flavonoids	-	
Phenolic compound	-	+
Volatile oil	-	-
Quinones	+	-
Sugar	-	-

(+)Positive;(-) Negative

Table: 2:Antimicrobial activity of aqueous flower extracts of *Pedalium murex(L)*against bacteria by Agar well diffusion method

:Mean of duplicate

* : Streptomycin (500 µg/disc)

± : Standard Deviation

Table 2 shows the phytochemical profile of the plant flower extracts. The presence of alkaloids, flavonoids, Tanni ,Phenolic compound and volatile oil were identified in aqueous extracts and tannin and flavanoid were found in ethanolic extractof *Pedalium murex(L).*They are organic substances and could be obtained in both primary and secondary metabolic process; they also provide a source of medicine since the earliest time. The plant kingdom has proven to be the most useful in the treatment of diseases and they provide an important source of all the world's pharmaceuticals**Kumar *et al.*, (2004) .**

The Table 1 The antibacterial effect of the plant extracts *Pedalium murex(L) was* determined by agar well method. The water extracts displayed appreciable antibacterial activities against such recalcitrant bacteria like *Pseudomonas auriginosa*, *S. aureus* and *E. coli* that are known to show above average resistance to most chemical antimicrobial agents. These pathogens are known to cause majority of community and hospital acquired infections and are capable of elaborating several virulence factors including the formation of biofilms on colonized surfaces (**Vickers et al.,1999**) The data obtained in this study is similar to those obtained from the study of the leaves and seeds of *P. biglobosa* (Jacq.) against *S. aureus, B. cereus, P. aeruginosa, A. niger and C. utilis.*

The aqueous extract produced larger zones of inhibitions because all the bioactive components might be an alkaloid or tannins or phenols, **(Pei et al.,2007)** have made similar observations and attributed the differences in activity to the high solubility of some of the phytochemical components such as tannins and phenols in ethanol than water. The conventional antibiotic gentamicin, consistently showed superior activity than either extracts similar to the data presented by other scholars . This may be attributed to the fact that conventional antibiotics and non-antibiotic antibacterial agents are usually prepared from synthetic materials by means of reproducible manufacturing techniques and procedures, herbal medicinal products are prepared from plant and animal origins, most of the time subjected to contamination and deterioration **(Rogger et al.,2007).**

It was found that the *Pedalium murex(L)* extract possessed greater antibacterial activity. Hence *Pedalium murex(L)* could be exploited for the control of microorganism such as *Pseudomonas auriginosa*, *S. aureus* and *E. coli*.

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