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Phytochemical compounds of *Padina gymnospora* and its mic effects

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Abstract

Sea weeds also called marine macroalgae are utilized in conventional cures in numerous parts of the world. Within the display think about, the extricates of marine macro algae *P. gymnospora* have been exposed its antibacterial action *in vitro* against Gram-positive and Gram-negative bacterial strains. The pharmaceutical properties and anti-microbial exercises was considered to be an marker of the capacity of the large scale green growth to synthesize bioactive auxiliary metabolites. It have been distinguished that the large scale brown sea weed *P. gymnospora* per 100g contain 6.2g protein, 0.20g fat, 3.7 g fiber, 2.4 mg niacin, 170mg ascorbic acid, 1. mg Ca, 3.12 mg P, 21 mg Na, and 16 mg K. Separated from that the *P. gymnospora* appears the phyto pharmaceutical compounds such as alkaloids, flavanoids, tannis, Terpanoids and phenolic compounds. They have known to appear restorative effect as well as showing antibacterial activity.

Keywords: Macro algae, *Padina gymnospora*, phytochemicals, MIC

Introduction

Irresistible infections cause 4 million passings around the world every year and such issue is compounded by anti-microbial resistance, as well as development of dangerous pathogens with the potential for fast worldwide spread. Contaminations caused by anti-microbial safe microbes are a major cause of dreariness and mortality. Most of the common bacterial strains cause irresistible maladies, and comes about in millions of passings each year around the world from pneumonia, bacteraemia and meningitis. In this way, there's an critical ought to find unused antimicrobial compounds with different chemical structures and novel components of activity for unused and re-emerging irresistible infections. Researchers accept that from marine large scale green growth a number of medicines may be inferred; such compounds from marine sources are presently being tried as medications for cancer, infectious disease and other pathogenic clutters. Marine large scale green growth or Ocean growth is the foremost available marine asset of the coastal zone that involves potential significance so therapeutic significance of ocean weeds having a place to Phaeophyceae, Rhodophyceae and Chlorophyceae from all over the world (Bouhlal *et al.*, 2010; Shanmughapriya *et al.*, 2008; García-Bueno *et al.*, 2014; Boisvert *et al.*, 2015) [2, 3, 4, 6]. Ocean growth are considered as source of bioactive compounds and deliver a extraordinary assortment Auxiliary metabolites characterized by a wide range of natural exercises. Compounds with cytostatic, antiviral, antihelminthic, antifungal and antibacterial exercises have been recognized in green, brown and red algae species (Spavieri *et al.*, 2010; Wang *et al.*, 2012; Manilal *et al.*, 2012; Eom *et al.*, 2013) [7, 8, 9, 13].

Sample collection: The ocean growth (Macroalgae) *Padina gymnospora* were collected by hand at lowtide within the rough shores of Covalam, Idinjankarai Coastal locale close Chennai, Southeast Coast of India. The ocean growth test were picked by hand and instantly washed with seawater to evacuate the remote particles, sand particles and epiphytes. At that point it was kept in an ice box containing slush ice and promptly transported to the research facility and washed altogether utilizing tap water to expel the salt on the surface of the test. At that point the seaweeds spread on blotting paper to remove excess water and shade dried at room temperature.

Identification: The collected test of *Padina gymnospora* was recognized by Dr. C. Stella, Department of Marine Science, Alagappa College, Karaikudi, Dr. T. Ramanathan, Center for Marine Science, Annamalai University, Porto-Novo, Tamil Nadu, India.

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Preparation of extract: THE extricate of *Padina Gymnospora* was taken from entirety plant utilizing cold permeation strategy. New *Padina Gymnospora* test were collected (1kg) and shade dried at room temperature at 37°C and ground well in a manual Process shimdzu Blender. The control (250g) was drenched with 750ml (1:3W/V) of hexane in an aspirator bottle for 48h at room temperature with intermittent shaking. The extricate was sifted through a Buchner Pipe with Whatman number 1 Channel paper. The filtrate was dissipated to dryness beneath decreased weight utilizing revolving evaporator or hot discuss broiler at 40°C. At long last rough extricate was gotten in powder shape. The unrefined extricate was put away at 4°C until encourage use.

Phytochemical analysis: The preparatory phytochemicals from the algal test extricates were decided. Within the preparatory phytochemical examination of rough extricates of *Padina gymnospora* for screened the nearness of glycosides, tannin, terpenoids, Anthroquinone, aminoacid, Sterol, Protein and flavanoids were carried out by Abu-Ghannam and Rajauria (2013)^[1] method.

Test Bacterial Strains

The bacterial strains, Staphylococcus aureus, ATCC25923, Klebsiella Pneumonia, ATCC 15380, Salmonalla Typhi, NCTC8394 and Shigella, ATCC 4698 were collected from Department of Microbiology, Bharathidasan University, Tiruchirappalli and used for the present study.

Anti-Bacterial Assays

The antimicrobial activity of the methanolic extract of *Padina gymnospora* were determined by measuring the zone of inhibition in the Kirby Bauer well diffusion assay and determined by using Minimum inhibitory concentration method. The results were compared with standard antibiotic, Penicillin.

Results and Discussion

Phytochemical examination: The mending properties of macroalgae are conceivably due to the nearness of different phtochemical constituents such as glycosides, tannin, terpenoids, anthroquinone, amino acid etc. Phytochemical investigation of algal extricate uncovered the nearness of constituents which are known to appear mechanical and pharmaceutical activities. The comes about of preparatory phytochemical (Table 1) investigation of unrefined extricates of *Padina gymnospora* contains glycosides, tannin, terpenoids, anthroquinone, amino corrosive, sterol, protein and flavonoids.

Table 1: Identification Phyto Compounds

	Phyto Compounds	Results
	Hexane Extract of <i>P. gymnospora</i>	Glycosides
	Tannins	++
	Terpenoids	++
	Anthroquinone	++
	Saponin	++
	Sterols	++
	Flavanoids	++

Antibacterial activity The antimicrobial exercises of rough extricates of *Padina gymnospora* against pathogenic bacterial strains were done and their zone of hindrance compared with standard anti-microbial penicillin. The ocean growth extricates were appeared more dynamic antimicrobial capability against, Klebsiella Pneumonia, Staphylococcus aureus, Salmonalla Typhi and Shigella when compared to the standard anti-microbials. (table2).

The antibacterial effect of *Padina gymnospora* shows positive result, when compared to regular standard antibiotics like penicillin. In solvent used as control there is no inhibition. The diameter of inhibition of standard antibiotics penicillin shows 12 mm. (Table 2)

Table 2: Anti-Microbial Activity of *P. gymnospora* Extract

Test Organisms	Zone of inhibition in(mm)		
	Negative control (solvent only)	Positive control	Experimental
		Penicillin	<i>P. gymnospora</i> extract
<i>S. aureus. K. pneumoniae</i>	Nil	12	18
	Nil	3	7
<i>S. typhi</i>	Nil	3	10
<i>Shigella</i>	Nil	5	5

Negative control: It implies that the well contains only the solvent (acetone) devoid of Bioactive compounds and authertic antibiotics.

Positive control: It indicates that the well contains authentic antibiotic penicillin, in aqueous medium.

Experimental: It implies that the well contains only the Bioactive compounds of the extract obtained from *P. gymnospora*

Average: Mean value of 3 different assays

Table 3: Addition of varying concentration of *P. gymnospora* extract to the LB culture of the growth of. Bacteria.

O.D value	Control	Experimental				
		Concentration of leaf powder per/ 10ml				
		0.5mg	1.0mg	1.5mg	2.0mg	2.5mg
O.D at 540nm	0.30	0.16	0.12	0.09	0.04	0.01

Average mean value of 3 different assay.

The minimum inhibitory concentration of ethanolic crude extracts against the tested organisms was shown in (Table -3). Ponders concerning the adequacy of extraction strategies light that methanol extraction yields higher antimicrobial action

than n-hexane and ethyl acetic acid derivation (1 Dubber and Harder 2008; Freile-Pelegrín and Morales 2004; Saritha *et al* 2013; Krish and, Das 2014)^[5, 10, 15, 11]. It is evident that extraction by organic solvents continuously give the next

productivity for antimicrobial exercises as compared to water extricates (Osman *et al.*, 2010; Amorim *et al.* 2012; Jaswir *et al.*, 2014 Kavita *et al.*, 2014) [17, 20, 16, 18]. The exploratory ponder uncovered that methanol watery and ethanol extricates caused greater clear zones than methanol extricates. Higher plants, as sources of therapeutic compounds proceed to play prevailing part in support of human wellbeing since relics. Over 50% of all present day clinical drugs are of characteristic item root (Kandhasamy *et al.* 2008., Taskin *et al.* 2010; Bianco *et al.*, 2013 Al Hazzani *et al.*, 2014) [22, 21, 23, 19] and characteristic items play an critical part in medicate advancement programs of the pharmaceutical industry (Kim *et al.*, 2007; Oh *et al.*, 2008) [24].

Conclusion

In the show consider the phyto pharmaceutical compounds such as glycosides, tannin, terpenoids, anthroquinone, amino corrosive, sterol, and proteins are separated from the ocean growth *Padina Gymnospora*. The pharmaceutical compounds hindered the development of the pathogenic bacterial strains. the antimicrobial action of the queous extricate of *Padina Gymnospora* demonstrates the more prominent proficiency than penicillin. Advance nitty gritty ponder is required for confining and building up the antibacterial substances from *P. Gymnospora*.

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