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Phycochemical Studies and Antifungal Activity on *Codium Flabellattum Silva Ex Niazmudin Sp* (Chlorophycota) from the Coast of Karachi, Pakistan

A. K. KHANZADA[++], S. KABIR, F, HUSSAIN* W, SHAIKH, N. A SHAH

Institute of Plant Sciences, University of Sindh, Jamshoro-76080, Pakistan

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Abstract: The green alga *Codium flabellattum silva ex Nizamuddin* sp harvested from the coast of Karachi, Pakistan, has been allocated for the fatty acid composition. Acid were changed to methyl esters and identified GC - MS.The highest saturated fatty acids was present n-Hexadecanoate (8.17%) and lowest saturated fatty acids was n-Docosanoate, (3.15%.) the Unsaturated fatty acid are maximum percentage in Methyl-tricosenote15.01%,10 Octadecenoicacid 10.81% , Hexadecanoic acid 7.87%, Heptadecenoate 7.14% and minimums n-Heptaecenoic acid 0.05% , 3,8-Dimethyl-27-nonadicneate ,0.42% ,in which 7 are mnonic ,4 are Dieonoic and 6 are trienoic fatty acids were found .The antifungal activity in *P. funiculosum* in Aqueous extract ,81% and *P. funiculosum in* Chloroform extract 80% and minimum inhibition activity against *P. cetricola* 40% in Aqueous extract was noticed. Potassium 21244 ,mg/kg, Calcium 10751.11mg/kg , Iron, 1653 mg/kg Magnesium 3179 mg/kg and minimum values was lead 2.39mg/kg and Chromium was present in lowest amount 0.73mg/kg and protein in the range 12.34% in Sandpits , Bulaji village 20.3 % and minimum in Hawks bay 10.56%

Key Words: Alga, Fatty acids, Chloroform extract antifungal activity, Aqueous extract , Sandpits , Bulaji.

1. INTRODUCTION

"Karachi" is a cosmopolitan city of Pakistan and also possess a 105 Km long coastline located at the Northern boundaries of Arabian sea. A number of islands beaches, and the mangrove swamps are the characteristics features of the coastline. The largest variety of Marine flora and fauna is displayed around the sandy and rocky beaches of cape Monze, Nathiagli, Paka, Paradise, Point, Buleji, Hawks-bay, Sand Pits, and Manora etc. The seaweeds are growing in the attached form along with rocks or found as drift in a huge amount (Shameel and Tanaka 1992). The extracts of seaweeds are applied to have antifungal and antibacterial activities also its inhabit the plant growth (Abdulsalam 1990, Rizvi and Shameel 2003, Burkholder *and* Sharma 1969, Chapman 1980, Arasaki *and* Arasaki 1983, Abbot 1988) The fruit crops and vegetables after harvesting were being destroyed by fungal infections. In 1990s, the food safety from mycotoxin contamination was under consideration of scientist internationally more than previous times. (Shun-Ichi 2005) In developing countries, the estimate of post harvest spoilage is 50% from field's transits, and storage place where as 25% spoilage is reported from industrial countries (Harvey 1978). (Eckert *and*Ogawa 1985). The seaweeds can be used to combat the different pathological hazards, of fruits and vegetables. Seaweeds can be used as a growth stimulator of fruits and vegetables. (Washington etc. 1999). 1.2 Economical and Medicinal Importance of Seaweeds 1.2.1 Historical Background The documentation of history of seaweeds was reported from Greek, Chinese and roman empires period . The word "Phycos"is a Greek word meaning seaweeds and Phycology is the study of seaweeds (Vashesta *et al* 2002).The Chinese were expert in using seaweeds as medicine for the treatment of goiter, tumor, fever, Angiredema, (chest infections) and renal problems and they did mention seaweeds uses in Chinese Pharmacopeias and Media. Shen Nung Pen Cao Jing 200 BC, Ben Cao Gang Mira 1518-1593 AQ, (Khan 1989) Lishih – Chen Sixteen century herbal Book provides references for the medininal use of brown algae for the first time. Due to presence of Io (Iodine) in Ts-ao Kang Mu (brown Algae), the European were using it as anti-Goiter in the form of Aethopies vegetables .The opening of fistula and wounds were carried out by using small pieces of Lamaneria hyper broean (in surgery) due to its swelling properties from moister places. (Ahmad etc 1989, Lee 1999) Seaweeds are important source of long chain poly unsaturated essential fatty acids from N-3 family (N-3 LC– PUPA) such as Eicosapantaenoic acid (EPA-20, 5N-3 also Icosapentaenoic acid) the Eloisa pentatonic acid can help in the reduction of risk factors of some disease and thrombosis. In Japan seaweeds are considered a part of their routine diet.According to recent information seaweeds are the major source of income for fishermen. They earn 50% income from green algae, 66.5% from brown algae and 28% from red algae. In Japan, China, Korea 33% Seaweeds are used on daily basis as well as salads are very famous due to presence of proteins, carbohydrates, minerals, fatty acids and vitamins. Fatty

[++] Corresponding author: E-mail *lecturer@gmail.com*

* Department of Agriculture and Agribusiness Management, University of Karachi-75270

acids belong to the category of organic compounds. They are the essential part of the human diet so their metabolism is under research since quite long. The seaweeds have been used as staple diet by human beings since ancient time (in eastern countries than western countries of world (Ahmad *et al* 1989 Kaur 1997).

CULTURING OF PATHOGENIC (FUNGI)

Potato Dextrose -Agar medium was prepared by using the components:

Potato extracts 4.0g, Glucose 20g ,Agar 15g, 1000 ml distilled water, (I Litter) 5.6 $^{+}$ 02 pH. All the contents were mixed and dissolved in distilled water. The solution was autoclaved at 120 °C 15 LB/sq inch pressure for 20 minutes.

Bioassay

The sterile assay medium at 40-45 C was poured in to sterile Petri dish and allowed to cool, the strip of highly absorbent paper (12.5 to 10mm diameters) impregnated with required amount (80 to 100 µ.g.) of different extracts such as ethanol, ethyl acetate, Chloroform, Methanol and Aqueous of the sample of designated seaweeds were placed on the surface of solid medium. The test organism was inoculated at the center of plates. The plates were incubated for 72 hours at 30°C for the evaluation of inhibition activity of the fungi. The growth of test fruit fungi compared with the controlled plates the percentage of mycelial inhibition was calculated as follows (Khanzada *et al* 2007)

% Mycelial inhibition = [(dc-dl)/dc] x 100

Dc = colony dia meter in control, dl colony dia meter in treatment.

ANALYSIS OF ELEMENTS FROM SEAWEEDS BY ATOMIC ABSORPTION SPECTOPHOTOMETER (AAS),

Digestion of the seaweeds:

The algal material was initially dried under shade at room temperature and later on in an oven at 60-80 ^{0}C for 1 h. One g of manually crushed sample material was carefully dissolved in 10 ml HNO_3 and the sample was left for 8 hours for the digestion. Acid solution of the sample was then heated gently on hot plate at 100-120 ^{o}C till the sample was nearly dried. When the sample became cool it was again digested with 8ml HNO_3 and H_2O_2 (2 : 1) and the samples was dried by keeping on hot plate 100-120 ^{0}C till 1 ml volume of the sample remained. The sample was cooled and diluted by adding 24ml double distilled water making total volume of 25ml. The colour of diluted sample should be bright yellow; otherwise the solution was filtered through Whatman filter paper .42.

Elemental assay:

Elemental analysis was carried out for 11 elements *viz.*, Ca, Cd, Cr, Cu, Fe, K, Mn, Mg, Ni, Pb and Zn.The samples were investigated for elemental analysis by using atomic absorption spectrophotometer (AAS), Hitachi Ltd. 180-50.S.N5721- at National Center of excellence for Analytical Chemistry University of Sindh, Jamshoro. Appropriate working standard solution was drawn for each element. The calibration curves were obtained for concentration vs absorbance. The data were statistically analyzed by using fitting of straight line by least square method. All elements were determined in seaweeds under this investigation procedure. A blank reading was also taken and necessary correction was made during the calculation of percentage concentration of various elements.

2. MATERIAL AND METHODS

PERSENTAGE RECOVERY TEST.

The affiance of extraction method was checked by conventional digestion method (CDM). The duplicate sample of each part of the spike with n known amount of metal strands (Flukia kamica)prior to digestion as described above. Sample blanks were also prepared in method. Each result values is mean of at least 3 independent beaches repapered in duplicate and each sample analysis at twice for each elements. The matrix of strands and sample solution was same by using 2N Nitric acid. The percentage recovery tests for element by this method.

Total Protein Analysis:

The protocol of ISI-24-1-e (Khanzada *et al* 2007) was used for the determination of total nitrogen, which was calculated using a nitrogen conversion factor of 6.25

TOTAL PROTEIN BY KJELDHAL

The sample was digested in H_2SO_4.con. (30 ml) in the presence of natural catalyst $CuSO_4$ (1g) and K_2SO_4 (10g), after digestion Sodium hydroxide (NaOH, 33%) were added followed by steam digestion, the distillate was collected in 20 ml boric acid (4%). Then nitrogen contain was determine by titration with HCl (0.01 N). A factor of 6.25 was used to evaluate total protein concentration.

ISOLATION OF FATTY ACIDS.

SEAWEED MATERIAL.

Codium flabellattum silva ex Nizamuddin were collected from Karachi coast and collected materials were washed with water and dried shade at room temperature for 20 days.

EXTRACTION.

The dried seaweeds were chopped into small pieces were dipped two liter ethanol (EtOH) for about

one month at room temperature .The ethanolic extract was filtered and evaporated under, reduced pressure below 40°C using Rotary Evaporator, which yielded dark green gummy residue

SAPONIFICATION.

Quantity of 150 ml. Ethanol (EtOH) and water (H_2O) (1:1,V/V) containing 10% KOH was added to the residue and reaction mixture was refluxing at 100 °C for 6 h. The mixture was concentrated under reduced pressure at rotary evaporator, and thereafter (H_2O) and diethyl ether (Et_2O) were added, and this procedure was repeated there times. The unsaponifiable matter was partitioned and their by separated .The aqueous alkaline fraction was acidified with 6NHCl(PH 5-6)and then extracted several times with (Et_2O).The total Et_2O fraction was dried over anhydrous Na_2So_4 and on evaporation of Et_2O residue was obtained.

COLUMN CHROMATOGRAPHY (CC).

The residue containing fatty acids fraction was Chromatographaed over silica gel.(70-230mesh Merck) column. The column was first eluted with n-hexane and thereafter Diethyl Ethyl was added in order of increasing polarity. First Fraction was eluted with pure hexane, fraction "A" was eluted from hexane: Chloroform (85:15), fraction "B" from hexane: Diethyl Ethyl (80:20), fraction "C" from hexane: Diethyl Ethyl (75:25), and fraction "D" from hexane: Diethyl Ethyl (70:30)), **(Table1, and 2,)**

ESTERIFACTION

All fractions (A-D) were estrified with diazomethane, 0.5 mg of each fraction was dissolved in MeOH and 0.5 ml of diazomethane was added. The reaction mixture was kept overnight at room temperature (28°C) and was then evaporated .The methylated fatty acid fractions were analyzed first by GC and finally by GC-MS.

IDENTIFICATION.

Gas Chromatrography-Mass spectrometry (C-MS)

The fatty acids (methyl ester) fractions were finally analyzed and identified by GC-MS, The analysis was performed on JEOL JMS 600H Agilest 6890N, equipped with 30 m×0.32 ZP-5MS column, stationary phase coating 0.25µm. The column temperature was kept at 70˚C for 2 min with increased at the rate of 4˚C per min up to 260˚C. Injection temperature 250˚C, split ratio 1:45, the carrier gas (Nitrogen/Helium) flow rate 1.0 ml/min. **Fragmentation of Fatty acids**

Spectral data: The GC-mass spectral chromatogram showed the presence of saturated and unsaturated fatty acids methyl esters; the significant ions from the mass spectra of these methyl esters are as follo+ws.

3,8-Dimethyl-27-nonadicneate: 196 (M^+C_{12} H_{20} O_2 10%) 165(M^+ 31-8%) 153(M^+ 43-15%) 139(10%) 125(20%) 111(30%) 97(70%) 83(100%)

Myristate: 242 ($M^+C_{15}H_{30}O_2$15%) 211(M^+31-15%) 199(M^+43-17%) 157(8%) 143(26%) 129(10%) 101(10%) 87(75%) 73(100%).

Tridecylat : 228(M^+-$C_{14}H_{28}$ O_2 38%) 197(M^+ -3110%) 185(M^+ -43-50%) 171(15%) 157(8%) 145(15%) 129(65%) 115(17%) 101(15%) 73(100%).

Table.1 Antifungal activity of *Codium flabellatum* against fruit spoiling fungi.

S/No	NAME OF ELEMENTS	FORMULA	AMOUNT Mg/ Kg
1	Calcium	Ca	10751.11±11.2
2	Cadmium	Cd	8.68±4.2
3	Chromium	Cr	0.73±0.3
4	Copper	Cu	14.9±6.2
5	Iron	Fe	1653±12.3
6	Lead	Pb	2.39±1.2
7	Potassium	K	21244±22.01
8	Magnesium	Mg	3179.58±12.36
9	Manganese	Mn	13.125±11.2
10	Nickel	Ni	2.96±1.23
11	Zinc	Zn	114.9±15.32

Table.2 Saturared Fatty acids of *Codium flabellatum* analyzed as methyl ester.and (b) Unsaturared Fatty acids of *Codium flabellatum* analyzed as methyl ester.

S.no	SYSTEMATIC NAME	COMMON NAME	MOLECULAR FORMULA	MOL. Wt.	R.R.T	Rel.%ag
(a)Saturated Fatty acids methyl ester.						
1	n-Hexadecanoate	Palmitate	$C_{17}H_{34}O_2$	270	28.8	8.71
2	n-Tridecanoate	Tridecylate	$C_{14}H_{28}O_2$	228	26.13	3.15
3	n-Tetradeconoate	Myristate	$C_{15}H_{30}O_2$	242	24.6	3.46
						15.32
(b)Unsaturated fatty acid methyl ester *Codium flabellatum silva*						
1.	3,8-Dimethyl-27-nonadicneate		$C_{12}H_{20}O_2$	196	21.55	0.42
	Tridecatrienoate		$C_{14}H_{22}O_2$	222	19.72	0.53
2.	Methyl-2-Tridecynote		$C_{14}H_{24}O_2$	224	27.57	0.94
3	Hexadecanoic acid	Pantadecylate	$C_{16}H_{32}O_2$	256	30.37	7.87
4	n-Heptaecenoic acid	Myrisoteate	$C_{17}H_{32}O_2$	208	19.9	0.52
5	Heptadecenoate	Heptadecenoate	$C_{18}H_{38}O_2$	282	33.45	7.14
6	Heptadecadienoate		$C_{18}H_{34}O_2$	280	67.83	1.14
7	Heptadectrienote		$C_{18}H_{32}O_2$	278	29.45	2.62
8	10-Octadecenoicacid	Oleate	$C_{19}H_{36}O_2$	296	32.1	10.81
9	n-Octadecanoate	Stearate	$C_{19}H_{38}O_2$	298	32.53	*1.89*
10	n-Nonadecanoate	Nonadecylate	$C_{20}H_{40}O_2$	312	57.2	*1.05*
11	n-Heptacosanoate		$C_{20}H56O_2$	424	45.12	0.63
12	Eicosa-8,11,14-trienoic acid	Eicosatrienoate	$C_{21}H_{36}O_2$	320	60.15	1.36
13	Methyl(allcis)-eico-sapentaenoate	Methyl eicosapentaenoate	$C_{21}H_{36}O_2$	316	58.17	2.31
14	9-Eicosenoate	Gadoleate	$C_{21}H_{40}O_2$	324	35.5	3.57
15	Eicosadienoate		$C_{21}H_{38}O_2$	322	36.42	2.31
16	Heneicosenote		$C_{22}H_{42}O_2$	338	37.15	3.67
17	11-Docoenoate	Cetoleate	$C_{23}H_{44}O_2$	352	38.73	3.46
18	Methyl-tricosenote		$C_{24}H_{46}O_2$	366	40.27	15.01
19	n-Pentacosenoicacid		$C_{25}H_{48}O_2$	380	41.68	3.46
20	n-Hexacoseoic acid		$C_{26}H_{50}O_2$	394	43.23	2.41
21	Nonacosatrienoicacid		$C_{29}H_{52}O_2$	432	44.15	1.99
23	n-Nnacosanate		$C_{30}H_{60}O_2$	452	69.57	1.05
	TOTAL					84.67
	3,Saturated, 23 Unsaturated, ,Total compounds=26 Total %age of Saturated + Unsaturated fatty acid = 99.99					
	(Mol.wt=molecular weight,R.R.T=relative retention time,Rel%age=relative percentage					

Methyl-2-Tridecynote: 224 (M^+C_{14} H_{24} O_2 10%) 193(M^+- 31-8%) 181(M^+ -4376%) 167(10%) 153(100%)

Hexadecanate acid: 268(M^+ C_{17} H_{34} O_2 9%) 237(M^+ -31,30%) 225(M^+-43,10%) 211(8%) 197(10%) 183(8%) 169(10%) 155(10%) 141(30%) 127(18%) 113(15%) 99 (65%) 85(60%) 171(70%) 57(100%).

Palmitate: 270(M^+ C_{17} $H_{32}O_2$ 40%) 239(M^+ -31,30%) 225(M^+-43,10%) 211(8%) 197(10%) 183(8%) 169(10%) 155(10%) 141(30%) 127(18%) 113(15%) 99 (65%) 85 (60%) 171(70%) 57(100%).

Heptadectrienote: 278 ($M^+C_{18}H_{32}O_2$6%) 247(M^+-31,10%) 235(M^+-43,11%) 221(10%) 207(8%) 151(100%).

Tetradecanate: 256(M^+0$C_{16}H_{32}O_2$40%) 225(M^+-31,10%) 213(M^+-43,30%) 199(10%) 185(18%) 171(20%) 157(19%) 143(12%) 129(55%) 115(20%) 101(15%) 87(30%) 73(100%).

Oleate: 296($M^+C_{19}H_{36}O_2$10%) 265(M^+-31,50%) 253(M^+-43,8%) 225(30%) 141(15%) 127(14%) 113(15%) 99(65%) 85(58%) 71(78%) 57(100%) .

Stearate: 298 (M^+ C_{19} H_{38} O_2 23%) 267(M^+ -31,10%) 255(M^+-43,20%) 241(7%) 227(8%) 213(9%) 199(15%)185(9%) 143(30%) 129(18%) 115(8%) 101(10%) 87(78%) 73(100%)

Heptadecenoate: 282($M^+C_{18}H_{38}O_2$10%) 251(M^+-31,9%) 239(M^+-43,10%) 225 (17%) 183(10%) 169(16%) 155(18%) 127(14%) 113(50%) 99(90%) 85(97%) 71(100%)

Octadecadienoate: 294(M^+ C_{19} H_{34} O_2 7%) 263(M^+ -31,8%) 251(M^+-43,10%) 223 (8%) 195(10%) 167(9%) 153 (10%) 139(13%) 125 (18%) 111 (40%) 97 (72%) 83 (60%) 69 (72%) 55 (100%).

Gadoleate: 324($M^+C_{21}H_{40}O_2$7%) 293(M^+31,6%) 281(M^+43,7%) 225(7%)197(8%) 183(8%) 169(10%) 141(13%) 127(13%) 113(15%) 99(27%) 85(65%) 71(78%) 57(100%).
Eicosadienoate: 322($M^+C_{20}H_{36}O_2$7%) 291(M^+-31,6%) 297(M^+-43,8%) 171(8%) 115(20%) 87 (100%).
Heneicosenote: 338(M^+ C_{22} H_{44} O_2 8%)307(M^+ - 31,6%) 295(M^+ - 43,7%) 267 (7%) 253(8%) 239(7%) 225(8%) 211(9%) 197(8%) 183 (10%) 85 (72%) 71(100%).
Cetoleate: 352($M^+C_{23}H_{44}O_2$7%) 321(M^+-31,8%) 309(M^+-43,7%) 295(8%)
225(8%) 197(10%) 183(11%) 155(12%) 141(13%) 127(15%) 113(20%) 99(30%) 85(75%) 71(100%).
Methyl-tricosenote: 366($M^+C_{24}H_{46}O_2$8%), 335(M^+-31,7%) 323(M^+43,6%) 309(9%)
281(8%) 253(10%) 239(11%) 225(10%) 211(10%) 197(11%) 183 13%) 169(14%) 155(17%) 141(18%) 127(20%) 113(23%) 99(30%) 85(75%) 71(90%) 57(100%)
n-Pentacosenoicacid: 380**(**M^+ $C_{25}H_{48}O_2$ 6%) 349(M^+ - 31,8%) 337(M^+ - 43,7%) 253 (9%) 211(8%) 169(10%) 155 11%) 141(15%) 127(17%) 113(19%) 99(22%) 85(70%)71(83%) 57(100%)

n-Hexacoseoic acid: 394 (M^+ C_{19} H_{34} O_2 9%) 363 (M^+ - 31,7%) 351(M^+ - 43,8%) 295(10%) 253(7%) 239(9%) 197(10%) 183(9%) 169(12%) 155(12%) 141(13%)127 (15%) 113(19%) 99(25%) 85(55%) 71(75%) 57(100%).

n-Heptacosanoate: 424 (M^+ C_{20} H_{28} O_2 7%) 393 (M^+ - 31,7%) 381(M^+ - 43,7%) 241(10%) 213(9%) 185(8%) 171(10%) 157(15%) 143(13%) 129(19%) 115(30%) 87 (78%) 59(100%).

Nonacosatrienoicacid: 432(M^+ C_{29} H_{52} O_2 8%) 401(M^+ -31,7%) 389(M^+ - 43,7%) 221(8%) 193(9%) 179(7%) 165(10%) 151(12%) 137(15%) 123(19%) 95(30%) 81 (75%) 67(86%) 53(100%).

Nonadecylat*e*: 312($M^+C_{20}H_{40}O_2$10%) 281(M^+-31,30%) 269(M^+-43,10%) 255(10%) 241(25%) 213(15%) 199(10%) 185(9%) 157(10%) 143(25%) 115(40%) 87(75%) 73(78%) 59(100%).

Eicosatrienoate: 320($M^+C_{21}H_{36}O_2$20%) 289(M^+-31,10%) 277(M^+43,12%) 263(8%)
221(30%) 207(10%) 193(11%) 165(9%) 137(8%) 123(9%) 109(12%) 95(19%) 81(16%) 67(25%) 53(100%).

Heptadecadienoate: 280(M^+ $_{18}H_{34}O_2$,35%) 249(M^+-31,20%) 206(M^+43,15%)
193(18%) 178 19%) 164(13%) 150(18%) 136(26%) 122 (40%) 94(90%) 80(97%) 66 (100%).

3. RESULTS AND DISCUSSION

The maximum inhibition activity was observed in Aqueous extract against test organism *P. funiculosum* 81% in ethanol extract *P. funiculosum* 80% and in Chloroform extract The inhibition activity was observed against *P. funiculosum* 80%. The moderate inhibition activity was detected in *P. funiculosum* 78% and *Aspergillus flavus 75*% in Ethyl acetate extract and *Aspergillus flavus* 72% in Methanol extract and *Aspergillus ochraceus* 73% in Aqueous extract The lowest inhibition activity was recorded in ethanol extract *Aspergillus flavus 45*% inhibition activity against *P. cetricola* 40% in Methanol extract minutest inhibition activity against *P. cetricola 40*% was seen. Aqueous extract lowest inhibition activity against *P. cetricola 40*% was noticed. In Ethyl acetate extract smallest inhibition against *P. cetricola 46* % . If we compare with the pervious reported data then The maximum inhibition activity was observed against P. funiculosum 81% in chloroform extract .The maximum inhibition activity was observed against test fungi, *A. ochraceus* 80% in ethyl acetate extract: The maximum inhibition activity was observed against test organism *P. funiculosum* 78% and methanol extract: showed the 73% in ethanol extract against the *A. ochraceus* and minimum antifungal activity showed the minimum inhibition against *A nigier* 20% Ethyl acetate extract As cited in literature, the eighty two macroalgae 18 chlorophyceace, 25 pheophyceace and ecorded was 25% (Sandpits), in *Codium laevigatum* from sites of (Sandpits), coast of Karachi comparing this data with total protein contents on dry weight basis shown 32% (Sandpits), 29% (Manora), 25% (Buleji and Paradise-Point) and 29.45% from Hawks Bay sites in *S. robusta* of Karachi coast. (Khanzada, *et al.,* 2007) which is quite comparable with the problem contains results of *Codium laevigatum*. *(Khanzada et al 2014)* Studies on the antimicrobial and antifungal activities of 50 species of Marine benthic algae antimicrobial activity of certain seaweeds against the 4 gram positive and 4 gram negative bacteria and 4 fugal species. Where as 24 species showed the activity and others were less inhibition are found in Methanolic extract. 22 algal species inhibited the growth of gram positive bacteria. *Stoechospermum maculatum* and *Stoechospermum marginatum* were the most active algae. These algae were collected from Karachi Coast. ***(****Usamngani et al* (1986)

The different locations of Karachi coast was analyzed for the composition of Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Ni, Pb and Zn elements The present research work analysis the 11 different metals which are The amount of Mg was the highest among them (Mg) Magnesium 3179.58 mg/kg, , Potassium (K) 21244 mg/kg,, (Ca), Calcium 10751.11 mg/kg, . (Fe) Iron 1653 mg/kg,, (Zn) Zinc 114.9 mg/kg, , (Cu), Copper 14.9 mg/kg, , (Mn), Manganese 13.125 mg/kg, , (Cd),

Cadmium 6.68 mg/kg, (Cr), Chromium 0.73 mg/kg, (Ni), Nickel 2.96 mg/kg, ,(Pb) Lead 2.39 mg/kg, **.(Table 1**) if we compare with the pervious reported data then the Ca is present in highest as 80750 ppm and lowest as 6880 ppm (Rizvi and Shameel, 2001), The concentration of Mg, K, Fe, Zn was higher than other elements and the amount of Cd, Ni, Pb and Cr was minimum from 1 to 7 ppm, whereas Cu and Mn was 11 to 20 ppm and Zn was 122 to 411 ppm as cited in *S. robusta* from the Karachi coast.(Khanzada *et al.,* 2007)

The different locations of Karachi coast was analyzed for the composition of Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Ni, Pb and Zn elements . The amount of iron was the highest among them Iron (Fe) 2694.6 m/kg Potassium (K) 12007 mg/kg , Calcium (Ca) 19710.3, m/kg Magnesium (Mg) 497.2, mg/kg, Zinc (Zn) 337 mg/kg, Manganese (Mn) 22.67, mg/kg, Copper (Cu) 15.22, Nickel (Ni) 8.8 mg/kg Cadmium (Cd) 5.0 mg/kg Lead (Pb) 2.11, mg/kg Chromium (Cr) 1.9 mg/kg The amount of Iron was the highest among them. Mg varied according to the collection point of *Codium lavigateum* maximum amount calculated as 2694.6Mg/Kg ,of Iron was present in the samples of seaweed collected from Buleji and minimum amount 15961.0 mg/kg was present in the samples from Manora. The concentration of Fe, K, Ca, Mg, Mn and Cu was higher than other elements and the amount of Cd, Ni, Pb and Cr was minimum from 1 to 8 mg/kg, whereas Cu and Mn was 11 to 15 mg/kg and Zn was 290 to 337 mg/kg in *Codium lavigateum* from the Karachi coast. (Khanzada *et al* 2014).

4. CONCLUSION

There are 3 saturated fatty acids and 23 unsaturated fatty acids were detected in Codium flebllattum The maximum inhibition activity was observed in Aqueous extract against test organism *P. funiculosum* 81% in ethanol extract *P. funiculosum* 80% Though the current studies presented determined quantity of Magnesium element in *Codium flabellattum* The dissimilarity in the elemental could be allocated as the ecological and geophysical issues, and protein in the range 12.34% in sandpits , Bulaji village 20.3 % and minimum in Hawks bay 10.56%.3,Saturated, 15.32 and 23 Unsaturated, ,Total compounds=26 .15.32.

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