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Detection of total Protein of (Red, Brown, and Green Algae) from Marine Algae Coast of Karachi Pakistan

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Abstract: The aim of this study was to evaluate the nutritional value of seaweed and chemical analyses of the dried marine algae. During this study ,Red algae and brown algae was analyzed the maximum total protein in Melanothamnus somalensis was (46.21%), followed by green algae were present in the highest total protein value Demonstrate, Solieria robusta (Greville) KYLIN (33.26%) and minimum quantity was contained in brown Alga Sargassium filifoillum (5.41%) nitrogen conversion factor of 6.25 was calculated using the total nitrogen determination, was used for **total protein by** kjeldhal

Keywords: Key words Red algae, Brown algae, Green Algae, Total protein, Chemical analysis ,Marine algae ,seaweed, kjeldhal .

1. INTRODUCTION

Chemical analysis of Marine algae is a valuable source of lipid, protein and carbohydrates on commercial scale.*(Chapman and Chapman* 1980*).*Chemical analysis of Marine algae has proves in as the cheapest dietary source for human beings. *(Abbot* 1988*).* Riboflavin, B_{12} and Niacin can be added in human diet by using Marine algae (Aaronson 1986). The coastal line of Pakistan is a very good habitat for the growth of many precious Marine algae (Shameel and Tanaka 1992) properly for commercially important seaweeds *(Shameel* 1996*)*. The number of useful species growing on coastal areas of Pakistan, is 78, out of them 35 belongs to Chlorophyta 20 to the Pheoophyta and 33 to Rhodophyta. *(Afaque Hussain et al* 2001*).* All 78 species of economic importance are not used in Pakistan as a food or medicine. There appears no research work done on these seaweeds. With respects to commercial or economic use. A number of fruits can be protected by using anti-fungal activity of those seaweeds. Instead of using chemical, these biological agents of seaweeds (herbal nature) can be used to control the post harvest diseases of fruits and vegetables. However antibiosis, parasitism, induced resistance in the host tissue and competition are some of the different methods which have been introduced to control the fruits and vegetables post harvest diseases as biological control bio fungicides along with other chemical and physical agentsthey have been already tried to control the spoilage of fruits and vegetables. But the issues of exact formulation and application methods for the efficiency and best results have not solved till today the spoilage of agriculture produce. Fungicide can be used to reduce the use of pesticides, on permanent basis. Due to increasing awarenes, of use of minerals and vitamins in human diet, fruits and fresh vegetables are being consumed more throughout the world. Fruits have occupied a significant part in the human diet so everybody is looking conscious in using fruits. The people want these fruits and vegetable free of any pesticides residue, toxins and microorganisms. But in developed in the ratio of 25%and 50% respectively and developing countries, fruits and vegetables are destroyed due to poor methods of harvesting, storage and transportation and commercialization *(Harvey* 1978*)., (Echert and Qgawa* 1985*)* The two main reasons for destruction of fruits and vegetables are the more amount of water in fruits and vegetables invites microorganisms to attack on them and 2nd reasons is the infection being caused by the injury on fruit and vegetable during harvesting, storage, transportation and commercialization *(Harvey* 1978*).* The 105 Kilometers long coastal area of Pakistan is famous or upwelling phenomenon (Thomson and Tirmizi 1998). The coastal line of Pakistan is a very good habitat for the growth of many precious Marine algae The seaweeds have been used as staple diet by human beings cince ancent time in eastern countries than western countries of world (Shameel and Tanaka 1992) property for commercially important seaweeds *(Shameel* 1996*)*. The number of useful species growing on coastal areas of Pakistan, is 78, out of them 35 belongs to Chlorophyta 20 to the Pheoophyta and 33 to Rhodophyta. *(Afaque Hussain et al* 2001*).*

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2. MATERIAL AND METHOD

Total Protein Analysis:

Nitrogen conversion factor of 6.25 was calculated using the total nitrogen determination, was used for **Total Protein By Kjeldhal** The sample was digested in H2SO4.con. Digestion Sodium Hydroxide (NaOH, 33%) after the natural catalyst CuSO4 (1G) and K2SO4 (10G) in the presence (30 ml), followed by steam digestion were added to 20 ml distillate was collected, boric acid (4%). If nitrogen HCl (0.01 N) was determined by titration with composed. A factor of 6.25 was used to estimate the total protein concentration ISI-24-1 E protocols (khanzada. 2007)

3. RESULTS AND DISSOCIATIONS

During this study the red Algae demonstrated the highest Total protein value followed by Brown Algae and green algae .The highest total protein was present in *Melanothamnus somalensis (46.21%), Solieria robusta* (Greville) Kylin (33.26%), *Chaetomorpha antennina* (25.26%), *Iyengaria stellata* Borgesen (24.46%), *Padina gymnospora* (Kutzing) Vickers (21.1%), *Codium flabellatum* silva ex (20.3%), *Padina commersonii bory* (19.3%), *Caulerpa cihemnitzia*

Esper 1802(19.00%), *Codium iyengaria* Borge san (15.41%), *Bryoiopsis penneta* Lamouroux (15.3%), *Calpomenia* ecuticulata parson (15.00%), *Ulva rigida* C.A.g. (13.01%), *Codium decorticatum* Woodward (12.8%), *Codium coronatum* selch (12.01%), *Hypnea pennosa* (Wulf) (11.9%), *Codium elongatum* (11.8%), *Codium laevigatum* Nizamuddin (10.3%), *Stokeya* indica thivy it doshi (19.99%), *Laurencia nidifica* J. Agardh 1852 (7.11%), *Jolyna laminariodies* Guimaraes (6.33%), and the very minimum quantity is present in brown alga *Sargassium filifoillum* (5.41%)

If we compare previous reported work to much difference due to ecological conditions and density of marine water. Still very little work done on total protein in marine algae properly coast of Karachi Pakistan. The highest value of total protein reported in Polysiponia sp and Ceranium sp. 25, 5 % while total protein in Gracilaria verrucosa 0.94% (Dere *et al.,* 2003) the highest value of (Dry weight was 35-47 % in division Rhodophyta and lowest total protein (TP) contents 5-10 found in division Pheophyta (Fleurence *et al.,* 1999) In general, red and brown algae species demonstrated large differences in their protein contents. The crude protein content of red seaweed varieties was 31 g 100 g and s.w **(Table 1).** whereas the crude protein content of brown algae was only 14 g/100 g and s.w. Similar protein contents for these macroalgae classes were described in other studies (Fleurence, 1999; Jurkovic´ *et al.,* 1995; Kolb *et al.,* 1999; Rupe´rez and Saura-Calixto, 2001).

Table 1 Macroalgae classes similar to the protein

S. No	Seaweed	Division	Mean±S.E % Protein (Dry weight)
1	*Codium decorticatum*	Chlorophyta	12.8 ±0.03
2	*Codium coronatum selch*	Chlorophyta	12.01%±1.02
3	*Codium flabellatum silva ex*	Chlorophyta	20.3% ±2.04
4	*Codium iyengaria Borgesan*	Chlorophyta	15.41%±0.03
5	*Codium elongatum*	Chlorophyta	11.8%±0.03
6	*Codium laevigatum Nizamuddin*	Chlorophyta	10.3% ±0.03
7	*Bryopsis*	Chlorophyta	15.3%±0.6
8	*Ulva rigida c.A.g.*	Chlorophyta	13.01% ±0.2
9	*Culerpa cihemnitzia (Esper*	Chlorophyta	19.3%±0.6
10	*Sargassum filifolum*	Phaeophyta	5.41% ±0.9
11	*Stokeyia indica*	Phaeophyta	9.99%±0.01
12	*Calpomenia ecuticulata parson*	Phaeophyta	15.00%±0.11
13	*Iyengaria stellata*	Phaeophyta	24.46%±0.2
14	*adina gymnospora.*	Phaeophyta	21.1% ±0.09
15	*Padina commersonii*	Phaeophyta	19.3%±0.2
16	*Jolyna laminariodies*	Phaeophyta	6.33%±0.01
17	*Hypnea pennosa (Wulf)*	Rhodophyta	11.9% ±0.2
18	*Laurencia nidifica*	Rhodophyta	7.11% ±0.9
19	*Chaetomorpha antennina*	Chlorophyta	24.46% ±0.01
20	*Solieria robusta*	Rhodophyta	33.26% ±0.1
21	*Melanothamnus Somalensis*	Rhodophyta	46.21% ±0.3

Especially green and red seaweeds algae species of large variation in the level of protein for the location, There is Protein levels, respectively green (Porphyra sp.) And red algae (Ulva compressa), 44,0% and dry weight could be as high as 26.62 percent (Hwang *et al.,* 2008) 0.94% and 2.9% of the dry weight

may be as little Generally, the range of 11% -24% and 9% -20% (/W W) around most of the brown seaweed, respectively, with the exception of the highest protein content, protein levels Undaria pinnatifida (Wakame) and Alaria esculenta, which contains 15% (/W W) (Morrissey's *et al.,* 2001, Burtin 2003, 2004 Fleurence); and 6.81% dry weight, the lowest protein contents (Patarra *et al.,* 2010) Generally, red and brown algae species showed large differences in their protein contents. Red seaweed 31 g /100 g of different types of brown algae crude protein content of crude protein content was SW, only 14 g /100 g and sw. Macroalgae classes similar to the protein content was noted in other studies (Jurkovic *et al.,* 1995;. Fleurence, 1999 Kolb *et al.,* 1999; Rupe'rez and the Saura-Calixto, 2001).

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