

**TO STUDY THE DYEING PROPERTIES OF SEAWEED (*ulva lactuca*) ON
COTTON FABRIC**R.Priyanka ¹and Dr. M.Jayakumari ²¹ Research Scholar, Department of Textiles and Apparel Design, Bharathiar University, Coimbatore, Tamil Nadu, India.² Assistant Professor, Department of Textiles and Apparel Design, Bharathiar University, Coimbatore, Tamil Nadu, India.

Abstract: *In the ulvaceae family, it is an edible green algae. Some marine algae contain large pigments such as chlorophyll, carotenoids, phycobili, beta-carotene, and lutein. Seaweed is rich in bioactive compounds, antioxidant and antimicrobial properties, and is not biodegradable and biocompatible with the skin. The process of seaweed involves polysaccharides, polysaccharides, lipids, proteins, carotenoids, vitamins, sterols, enzymes and antibiotics. It is especially rich in polyphenols, fucoidans and carotenoids. Alkaloids, terpenes, terpenoids, agaragar, algin, and phloro tannin are antimicrobial compounds known in seaweeds. Using ulvans and oligo ulvans, natural dyes are extracted from the green seaweed and serve as color producing pigments. Ulvans are water soluble pigments that have been used to absorb green color and to transport it to the surface of the fibre. The primary pigment for Ulvans in seaweed. The dyes are extracted from sea weed. In this study the color was extracted from green seaweed which shows promising color for fabrics.*

Keywords: seaweed, medicinal use, color pigments

I. INTRODUCTION

In the ulvaceae family, it is an edible green algae. Some marine algae contain large pigments such as chlorophyll, carotenoids, phycobili, beta-carotene, and lutein. Seaweed is rich in bioactive compounds, antioxidant and antimicrobial properties, and is not biodegradable and biocompatible with the skin. The process of seaweed involves polysaccharides, polysaccharides, lipids, proteins, carotenoids, vitamins, sterols, enzymes and antibiotics. It is especially rich in polyphenols, fucoidans and carotenoids. Alkaloids, terpenes, terpenoids, agar agar, algin, and phloro tannin are antimicrobial compounds known in seaweeds. 32 chlorophyta, 64 phaeophyta and 125 rhodophyta total 250 species worldwide. It can remove toxic metals such as copper, zinc and cadmium ions, nickel, lead and can be used in the dyeing process depending on the seaweed. Using ulvans and oligo ulvans, natural dyes are extracted from the green seaweed and serve as color producing pigments. Ulvans are water soluble pigments that have been used to absorb green color and to transport it to the surface of the fibre. The primary pigment for Ulvans in seaweed. The dyes are extracted from sea weed. Ulvans main pigment in seaweed. The nutritional analyses of seaweed have shown high amount of carbohydrates as well as minerals, vitamins, iodine. It is used for dye effluent treatment.

It has special characteristics such as high absorption of moisture and free from allergies. Great supply of unsaturated fatty acids, dietary fibers and high nutrients for sea weeds. Proteins less than 5% in green seaweed. It is used mainly for cosmetic purposes. Ulvalactuca marine algae is a rich source of fiber and nutrients. It has high mineral content. Green seaweeds are sustainable biomass feed stocks for the food and biotech industries from an economic perspective, including bioremediation, integrated aquaculture systems, and future bio fuel production.

II. MEDICINAL USES

To accept health advice for seaweeds, there are few clinical trials. Seaweeds, however, are an essential mineral origin and low to sodium. Because of decreased cholesterol and suppression of appetite, they may be useful in heart conditions. For wound dressings, alginates derived from seaweed were used. Patients taking warfarin and eating a large quantity of seaweed foods that undergo a shift in the international standardized ratio due to the high vitamin K content of seaweeds. Thanks to its effective components, which are responsible for its numerous pharmacological activities, aquatic medicinal plants were the potent source of human health. Due to their secondary metabolites, the current limited use of marine algae needs to be diversified into other areas of use. As a plant with a unique structure and biochemical composition, seaweed could be used in the form of food and medication for its multi-functional properties.

Weight watchers need not fear when ingesting seaweed, as it offers just 5 to 20 calories and contains practically no fat. Seaweeds, like sea lettuce, are strong iodine sources that help to stimulate and sustain the thyroid gland's proper functioning. Sea lettuce also contains high protein and iron quantities. Sea lettuce serving offers just 5 to 20 calories and almost no fat. Sea lettuce has a high content of fibre, which gives a sense of satiety when consumed in a meal. Snack foods and other

processed food items can be flavored with seaweed granules. This helps to reduce the consumption of sodium and reduces the risk of high blood pressure, heart attack or stroke. Sea lettuce's high soluble fiber content slows the rate of digestion of meat, thus helping to balance and control the absorption of glucose into the bloodstream. Sea vegetables fiber soaks water and helps to remove waste. There are anti-inflammatory and anti-cancer properties of sea lettuce and other marine vegetables.

III. METHODOLOGY

3.1.Extraction of dye from seaweed

3.1.1.Materials Required

- Fabric – 100% Cotton
- Extracted solution – 100ml
- M:L:R – 1:5
- Drying Temp.- 60°C -70°C
- Time – 30 minutes
- Curing Temp. .- 60°C -70°C

Collecting and cleaning the Seaweed with distilled water. For 3 weeks, they were dried shadow and grinded into fine powders. Collect and store the fine powders in sterile containers. Extracts using soxhlet instruments were the bioactive compounds. About 100ml of solvent (Water/ Methanol/ Ethanol) was used for 20gm of powder. Soxhlet extraction was carried out for 30mins. The extracts were collected and stored.



SEAWEED POWDER

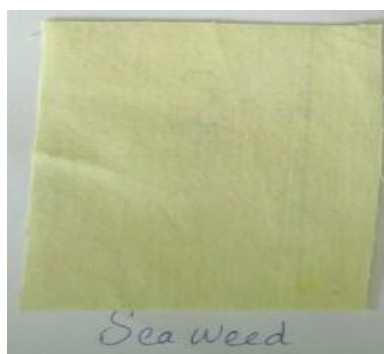


DYES EXTRACTED FROM SEAWEED

IV.RESULT

4.1.Finishing of extracts on fabrics

The fabric samples was treated separately using citric acid as cross linking agent separately.The fabric specimens are treated separately with the pigments collected using citric acid as cross-linking tool. The extracts are added to the fabric by dip and dry-method. The finished fabrics were taken and dried at100-120oC for 5min and cured at 180oC for 3min.



SEAWEED DYED FABRIC

V.CONCLUSION

The extracted color from seaweed gives very good colour on fabrics. The main benefits is there very few amount of extracted dyes gives more color. This color finished fabric shows special properties like antibacterial, antifungal and also antioxidant. Dyeing properties were analyzed. The color fastness test shows good to average further studies can be done by changing the mordents to give different shades and colors.

VI.REFERENCES

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