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Ethanol extraction of seaweed on polyester fabric

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Abstract
Seaweed is abundant in bioactive compounds, antimicrobial and antioxidant properties, and is not compatible with skin and biodegradable. In the ulvaceae family, it's an edible green alga. Most marine algae, including chlorophyll, carotenoids, phycobili, beta-carotene, and lutein, have large pigments. The aquatic algae process contains polysaccharides, polysaccharides, lipids, carbohydrates, carotenoids, vitamins, enzymes, sterols, and antibiotics. Alkaloids, terpenes, terpenoids, agaragar, algin, and phloro tannins are the antimicrobial compounds present in seaweeds. Natural colors are produced from green seaweed using ulvans and oligo ulvans and serve as a color that produces pigments. Ulvans were water-soluble pigments used to absorb and transmit green to the surface of the fabric. The Ulvans ' key seaweed pigment. The colors are separated from the sea weed. In this study, the color was extracted from green seaweed, which shows promising color in the fabric.

Keywords: Seaweed, medicinal use, ethanol extraction, color pigments, polyester fabric

1. Introduction

1.1. Seaweed (*Ulva lactuca*)

It's the ulvaceae family's edible green algae. Many marine algae, including chlorophyll, carotenoids, phycobili, beta-carotene, and lutein, have large pigments. Seaweed is abundant in bioactive compounds, antimicrobial and antioxidant properties, and is not compatible with the skin and biodegradable. Polysaccharides, polysaccharides, lipids, proteins, carotenoids, vitamins, sterols, enzymes and antibiotics are involved in the process of marine algae. Alkaloids, terpenes, terpenoids, agaragar, algin, and phloro tannins are the antimicrobial compounds found in seaweeds. A total of 250 species worldwide are 32 chlorophyta, 64 phaeophyta and 125 rhodophyta. There are 32 cholrophytes, 64 phaeophytes and 125 rhodophytes in a total of 250 species worldwide. It can eliminate toxic metals like copper, zinc and cadmium ions, nickel, lead and can be used in the dyeing process depending on the seaweed. Natural dyes are obtained using ulvans and oligo ulvans from the green seaweed and function as color producing pigments. Ulvans are water-soluble pigments that are used to absorb and pass green to the surface of the fiber. The Ulvans ' primary marine pigment. The coloring is taken from the sea weed. Ulvans ' primary pigment in seaweed. Study of marine foods shows high levels of carbohydrates, minerals, vitamins and iodine. It is used for treating the dye's effluent.

It has special features such as high absorption of moisture and free from allergies. Good source of unsaturated fatty acids, dietary fibers and high nutrients for aquatic weeds. Proteins below 5% in green seaweed. It is used mostly for cosmetic purposes. Ulvalactuca's marine algae is a rich source of fiber and nutrients. It has a high mineral content. Green marine algae are sustainable feed supplies for the food and biotech industries from an economic perspective, including bioremediation, integrated aquaculture systems, and future biofuel growth.

1.2. Medicinal Uses

There are few clinical studies that find marine algae health advice. Seaweeds, however, are an essential, low sodium mineral source. Due to lower cholesterol and suppression of appetite, these may be helpful in heart conditions. Seaweed-derived alginates were used for wound dressings. Patients taking warfarin and eating large amounts of seaweed foods due to the high content of seaweed vitamin K witnessing a change in the standardized global ratio. Due to their active components, which are responsible for their various pharmacological activities,

aquatic medicinal plants have been the dominant source of human health. Because of their secondary metabolites, the current limited use of marine algae needs to be diversified into other areas of use. Seaweed could be used in the form of food and medicine as a plant with a unique structure and biochemical composition due to its multi-functional properties.

Weight watchers do not need to be vigilant when ingesting seaweed, as it offers just 5 to 20 calories and contains virtually no fat. Seaweeds, such as sea lettuce, are good sources of iodine which help stimulate and sustain the thyroid gland's proper functioning. Sea lettuce is also high in protein and magnesium. Only 5 to 20 calories and almost no fat are available for serving sea lettuce. Sea lettuce has a high fiber content that gives a sense of satiety when eaten 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 lowers the risk of high blood pressure, heart attack or stroke. Sea lettuce's high soluble fiber content increases the rate of meat digestion, helping to regulate and control the absorption of blood glucose. Sea vegetables fiber soaks water and helps remove waste. Anti-inflammatory and anti-cancer effects of marine lettuce and other marine vegetables.

1.3. Polyester fabric

Polyester is a synthetic fiber formed by the chemical action of alcohol acid from wood, oil, water, and air. A mixture of molecules in this reaction makes a large product with a structural repeat that retains its form, hard to stain, throughout its length. For home furniture, blankets, sheets, bed spreads, curtains, mattress ticking and table clothes, polyester and polyester mixtures are also used to enhance absorption and reduce static electricity polyesters. Also used in pillows, comforters, bedspreads, quilted clothing, other families, winter jackets, etc.

2. Methodology

2.1. Materials required for finishing

Fabric	-	100%Cotton
Ethanol Extracted	-	100ml
M: L:R	-	1:5
Drying Temp.	-	60ºC -70^{0}C
Time	-	30 minutes
Curing Temp.	-	60ºC -70^{0}C

2.2. Extraction of dye from seaweed

The seaweed with distilled water is collected and washed. For 3 weeks, they dried shadow and grinded into fine powders. Collect and store the fine powders in sterile containers. Using soxhlet instruments, bioactive compounds are obtained. Approximately 100ml solvent (Ethanol) was used for 20 gm of dust. Soxhlet extraction was carried out for 30 minutes. The extracts are collected and stored.

Fig 1: Seaweed and Seaweed Powder

Fig 2: Soxhlet Extraction and Ethanol Extracted Solution

3. Result

3.1. Finishing of seaweed extracts on polyester fabrics

The fabric samples were used as a cross-linking agent with the extracts obtained separately using citric acid. The extracts are applied to the polyester cloth via the dip and dry process. The finished fabrics were taken and dried at 100ºC-120ºC for 5 min and healed at 180ºC for 3 min.

Fig 3: Seaweed Extracts Dyed Polyester Fabric

4. Conclusion

The color of the seaweed gives a very good color to the polyester fabrics. Many types of seaweed are available, the main advantage of being colored by seaweed. Colors are provided by every single seaweed. Special properties such as antibacterial, antifungal and also antioxidant have been tested for this color finished fabric. The color velocity test shows good results. More studies can be conducted by adjusting the mordents to give different shades and colors, as well as by changing the extraction method which gives good results.

5. References

1. "Ulvalactuca". Gettysburg College. Retrieved, 2007.
2. Hirst Michael. "Toxic seaweed clogs French coast". BBC. Retrieved, 2009-08-11.
3. Samuel, Henry. "Almost 100 places in Brittany have toxic seaweed". Telegraph.co.uk. Retrieved, 2009-08-11.
4. Lymbery, Philip. Farmageddon: The True Cost of Cheap Meat. Bloomsbury Publishing, 2014, 179. ISBN 9781408846421.
5. Chrisafis, Angelique. "Brittany beaches hit by toxic algae". The Guardian (27 July 2011). Retrieved 31 December 2015.
6. McKenna, Maryn (26 July 2011). "Attack of the Deadly Slime: Farm Effluent Ruins French Beaches". Wired. Retrieved 31 December 2015
7. Geertz-Hansen O, Sand-Jensen K, Hansen DF,

Christiansen A. "Growth and grazing control of abundance of the marine macroalga, UlvalactucaL. in a eutrophic Danish estuary". Aquatic Botany. 1993; 46 (2): 101-109.
8. Michael Guiry. "Overview of Ulvalactuca ecology". The Seaweed Site. Retrieved, 2007.
9. Chinta SK, Rajesh Kumar singh. Processing Problems of Polyester and Its Remedies. International Journal of Engineering Research & Technology. 2012; 1 (7):1-19.
10. Kausar A. Review of fundamentals and applications of polyester nano composites filled with carbonaceous nano fillers. Journal of Plastic Film & Sheeting. 2019; 35(1):22-44.