

The Extraction of Pearl Essence from Different Types of Fishes

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Abstract: Pearl essence is extracted from fish scales. Guanine is an iridescent substance that is found in the epidermal layer and scales. In its crystalline form guanine reflects and refracts light and thus acts as a camouflage to fish. The suspension of guanine in a solvent is called "essence of pearls". It was formerly used in cosmetics and paints. Guanine is lustrous material found in the epidermal layer and scales of most fishes like oil Sardine Mackerel, Herring and various carps bleak, ribbon fish etc. In United States herrings is one of the major species exploited for production of pearl essence. In India, ribbon fish is used for production of pearl essence. When guanine particles are deposited on the inside surface of solid beads, an optical effect similar to that of real pearl is obtained. Therefore, the present comparative study of extraction of pearl essence from scales of different types of fishes may play a decisive role in quantity of pearl essence from different types of fishes.

Keywords: Pearl Essence, Fish Scales, Camouflage to Fish, Guanine, Cosmetics and Paints

I. INTRODUCTION

Jaquin, in 1956, a Frenchman coined a method of processing of artificial pearl with the help of pearl essence. It is produced commercially in United States, Japan, and many others developed countries.

Scales from different types fishes collected from local market. Freshly removed scales are collected and washed to remove adhering foreign matter. Scales can be preserved in 10-15% brine. The brine is later drained off and the scales are squeezed in muslin cloth bags and compressed. The compressed mass can be stored at 0°C. Pearl essence can be prepared as an aqueous or non-aqueous suspension and measured the quantity of pearl essence from different samples. Along with Ribbon fish other fishes like the Sardine, mangrove red snapper (*Lutjanus argentimaculatus*), also known as mangrove jack, also gives the good quantity of pearl essence.

II. MATERIAL AND METHODS

2.1 Material Used

Fish species	Common Name	Body weight	Weight of scales(gm)	Weight of Pearl essence (gm)
Trichuruslepturus	Ribbon fish	Per 100 gm	1.4 gm	0.290
Sardinellalongiceps	Sardine	Per 100 gm	1.9 gm	0.130
Lutjanusargentimaculatus	Mangroove Red snapper	Per 100 gm	1.35 gm	0.125

2.2 Method

A. Method of Preparation of Pearl Essence from Fish Scales

Guanine deposit on the fish scales is more removable as compared to that on epidermis. Freshly removed scales are collected and washed to remove adhering foreign matter. Scales can be preserved in 10-15% brine. The brine is later drained off and the scales are squeezed in muslin cloth bags and compressed. The compressed mass can be stored at 0°C. Pearl essence can be prepared as an aqueous or non-aqueous suspension.

B. Aqueous Suspension

Washed scales are agitated with minimum quantity of water containing little ammonia in an agitator. The mixture is then passed through a strainer to remove the scales. The pearly substance present as a suspension in the liquor is purified by settling in a cool atmosphere. Guanine settles and the supernatant is decanted and replaced with fresh ammoniacal water. The process is repeated several times until the guanine crystals are fairly well purified. 0.3% salicylic acid is used as preservative.

C. SWOC Analysis/Limitations

- **Strength-** Availability fish scales
- **Weakness-** Use of scales of other type of fishes as compare to ribbon fish
- **Opportunity-** Growing market demand for pearl essence from other fishes' scales
- **Challenges** – Improve the quality of pearl essence products from other fishes' scales collection fresh scales

III. RESULT

Yield of pearl essence according to species of fishes:

Fish species	Common Name	Body weight	Weight of scales (gm)	Weight of Perl essence (gm)
Trichuruslepturus	Ribbon fish	Per 100 gm	1.4 gm	0.290
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Most important used in the preparation of artificial pearl.

- Used as spray or dip for several items to impart an iridescent sheen reminiscent of pearls.
- Used on diverse articles as shoe, pencil, fishing rod, spectacle frame, walking stick etc.
- Also used as finishes for textiles.
- Normally cost of pearl essence is 700 Rs. / Kg and mostly scales consider as waste product of above fish also beneficial for the used for the preparation of the pearl essence.

IV. CONCLUSION

India pearl essence market size exceeded USD 75.0 million and the production of natural pearl essence is estimated to be less than 50 tonnes. The industry has witnessed tremendous growth in recent years owing to high product demand in several end-use industries such as paints, cosmetics, & plastics. The substrate has gained wide acceptance in the cosmetics sector, on account of its ability to create lustrous & opalescent effects in all types of cosmetics and personal care products. The nacreous pearl essence pigment has become very popular in the creation of lustre effects in coating. Help in the generation of new and unique colour effects for automobile, industrial, cosmetic and pharmaceutical applications.

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