

Development of an Eco-friendly body cleanser from waste

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Abstract - Surfactants are widely used in household products. These surfactants are toxic to organisms on the environment and have the potential to impact the ecosystem [1]. Hence, an attempt was made to develop an alternative for one such surfactant – Body cleaning soaps. The present work focusses to develop a body cleansing powder with waste materials like dried flowers, dried leaves, and other materials that are completely natural with skincare activity so that it can be an alternative to the so-called skincare soaps also. This may reduce the effects of synthetic surfactants on the environment and also their effects on the skin. Here, the waste materials are made use of to develop a body cleanser thereby reducing the toxic impacts of body cleaning soaps and also promoting the complexion of the skin with no harmful chemicals involved. Compositions proposed for all skin types.

causes an increase in dehydrating effect, irritability, and alteration in the bacterial flora of the skin [3].

Hence, the present work focusses to develop a natural and an eco - body cleanser as a substitute for the current body cleansing soaps.

2.MATERIALS AND METHODS

2.1 Materials

Table -1: Materials and uses on skin

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S.N	Material Name	Uses Of Materials On Skin
1	Mung bean	Skin detox [4]
2	Rose – flower petals	Promotes skin complexion [5]
3	Champak - flower petals	Wound healing [6]
4	White turmeric	Treatment of skin diseases [7]
5	Babchi seeds	Treats Skin diseases [8]
6	Kus Kus grass/ Khas Khas grass - root	Relieve burning sensation, relieve excess sweating, treats skin disorders and improves skin complexion [9]
7	Sandalwood	Improves skin tone and complexion, relieves burning sensation, cleanses wounds and

Key Words: herbal, natural, body cleanser, skin cleanser, eco-friendly, waste management

1.INTRODUCTION

Surfactants are widely used in household products. After the usage, surfactants and their products are predominantly discharged into sewage treatment plants and then dispersed into the environment through sludge disposal on lands and effluent discharge into surface waters which have the potency to have an impact on the ecosystem due to their toxicity on organisms in the environment [1]. Aquatic toxicity data are widely available and [2] has summarised the chronic toxicities of surfactants to aquatic animals. Sewage sludges have been found to contain high concentrations of surfactants as well as other contaminants and they are increasingly being applied on agricultural lands as fertilizers for plants [1]. The terrestrial environment has become a substantial dump yard for surfactants [1]. High concentrations of surfactants and their products after degradation may affect organisms in the environment [1]. The present work targets the body cleaning soaps, one of the commonly used surfactants by the population, and they also have pH values outside the range of normal skin pH, thereby leading to an increase in skin pH on usage, which in turn

		stops secretions [10]
8	Red sandalwood	Heals acne, skin detox, skin diseases [11]
9	Neem leaves	Treats skin diseases, wound healing [12]
10	<i>Acalypha indica</i> leaves	Treats itching [13]
11	Hibiscus - flower petals	Wound healing [14]
12	Lemon fruit peel	Strong antioxidant and antimicrobial activity [15]
13	Orange fruit peel	Anti-aging potential [16]
14	Wild Turmeric	Treats headache and itching [17]
15	Zedoary	Treats Skin diseases and wounds [18]
16	<i>Plectranthus vettiveroides</i> - root	Treats allergic rashes, fungal infections [19]
17	Fuller's earth	Removes skin blemishes, makes skin soft, absorbs excess oil [20]
18	Nutgrass	Useful in skin diseases, improves skin tone and complexion [21]
19	Tanner's cassia - flower petals	Glowing skin and improves skin complexion [22]

2.2 Method of Preparation

The above-mentioned ingredients are dried, mixed in specific ratios (based on skin types which are discussed below), and ground to a fine powder.

This powder acts as a skin cleansing powder.

2.3 Ratio for skin types:

Though the focus on skin type seems out of focus, it is an important part to be addressed when proposing a substitute to the current body cleansing soaps. Unless the

given solution provides satisfaction to the soap customer, he/she may still prefer the body cleansing soaps, which will make the present work go waste.

2.3.1 Composition For Oily Skin

Table - 2: Composition For Oily Skin

S.No	Material Name	Amount(g) Per 100g Of The Powder
1	Mung bean	5.5
2	Rose - flower petals	5.5
3	Champak - flower petals	5.5
4	White turmeric	5.5
5	Babchi seeds	5.5
6	Kus Kus grass/ Khas Khas grass -root	5.5
7	Sandalwood	5.5
8	Red sandalwood	5.5
9	Neem leaves	5.5
10	<i>Acalypha indica</i> leaves	5.5
11	Hibiscus - flower petals	5.5
12	Lemon fruit peel	5.5
13	Orange fruit peel	5.5
14	Wild Turmeric	1.4
15	Zedoary	5.5
16	<i>Plectranthus vettiveroides</i> - root	5.5
17	Fuller's earth	5.5
18	Nutgrass	5.5
19	Tanner's cassia - flower petals	5.5

2.3.2 Composition For Normal Skin

Table 3: Composition For Normal Skin

S.No	Material Name	Amount(g) Per 100g Of The Powder
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1	Rose – flower petals	7
2	Champak - flower petals	7
3	White turmeric	3.5
4	Babchi seeds	3.5
5	Kus Kus grass/ Khas Khas grass -root	7
6	Sandalwood	7
7	Neem leaves	7
8	<i>Acalypha indica leaves</i>	7
9	Hibiscus – flower petals	7
10	Lemon fruit peel	7
11	Orange fruit peel	7
12	Wild Turmeric	1.75
13	Zedoary	3.5
14	<i>Plectranthus vettiveroides - root</i>	7
15	Fuller's earth	7
16	Nutgrass	3.5
17	Tanner’s cassia - flower petals	7

13	Zedoary	3.5
14	<i>Plectranthus vettiveroides - root</i>	3.5
15	Fuller's earth	3.5
16	Nutgrass	3.5
17	Tanner’s cassia - flower petals	8.2

2.3.3 Composition For Dry Skin

Table 4: Composition For Dry Skin

Table 4: Composition For Dry Skin		
S.No	Material Name	Amount(g) per 100g of the powder
1	Rose – flower petals	8.2
2	Champak - flower petals	8.2
3	White turmeric	3.5
4	Babchi seeds	3.5
5	Kus Kus grass/ Khas Khas grass -root	3.5
6	Sandalwood	8.2
7	Neem leaves	8.2
8	<i>Acalypha indica leaves</i>	8.2
9	Hibiscus – flower petals	8.2
10	Lemon fruit peel	8.2
11	Orange fruit peel	8.2
12	Wild Turmeric	1.75

3.RESULTS AND DISCUSSION:

The leaves of the trees once shed, are collected and burnt. But these dried, shed leaves with skincare activity have been used.

Along with this, the Lemon Peels, Orange Peels, which are just left as waste have been used in the development of this cleanser.

Both before and after usage, this cleanser even on direct discharge to the soil enriches the soil and causes no harm to the soil.

In water bodies, the cleanser gets settled down with the mud thereby enriching the mud in the water bodies.

This cleanser also has strong skincare activity.

It has materials with antioxidant and antimicrobial activities.

It has a natural aroma which is mild and relieving.

It acts as a natural scrubber.

It can heal wounds, treat skin diseases and allergies, improve skin complexion, remove excess sweat, treat acne, relieve itching, and burning sensations.

Though 19 materials have been mentioned overall in the cleanser making (as in 2.1), the materials can be used based on availability and need and it is not compulsory to use all the 19 materials.

4.CONCLUSION

Hence, used and unused leaves, flowers, and other plants/tree parts with skincare activities have been converted to useful skin cleanser with the addition of certain other skincare ingredients thereby developing a completely harmless cleanser for both the skin and the environment.

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