Formulation and Evaluation of Herbal Facewash: A Step Towards Nature and a Boon to Skin

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ABSTRACT

Acne and pimples are treated using herbal face washes. Herbal Facewash eliminates excess oil without eliminating nutrients from the skin and contains rich plant-based components like feverfew (Tanacetum parthenium) and neem (Azadirachta indica). The building blocks of finished herbal medicines are known as herbal preparations. These can be comminuted or powdered herbal ingredients as well as extracts, tinctures, and fatty oils of herbal materials. The demand for herbal formulations is rising on the global market. Establishing the herbal face wash with aqueous neem leaf, tulsi leaf, and orange peel extracts is a very commendable effort. As a result of checking and evaluating a number of factors, including colour, pH, consistency, washability, irritation, and spreadability, it was determined from the current experiment that the herbal face wash formulation was more effective than the commercial face wash. Since all of the ingredients in this composition are herbal, they are safe for the skin and trustworthy.

Keywords: Acne, Pimples, Facewash, Feverfew, Neem, Tulsi.

INTRODUCTION

Skin

The principal organ, the skin makes up for 15% of an adult weight. In adults, it has a surface area of 1.5 to 2 metres square and contains glands, hair, and nails. The skin act as barrier against germs, regulates body temperature, and also function as sensory organ helping us to feel and touch. Mucus membranes covers body surface and form a continuous layer beneath the skin.\(^{(1)}\) Cosmetics are defined as preparations of blends of various chemical components, either of natural origin or generated synthetically.\(^{(2)}\) Cosmetics are substances that are applied to the body in an effort to enhance attractive traits and beautify, cleanse, or improve appearance.\(^{(3)}\) We use cosmetics to our bodies to clean, perfume, protect, modify the way they seem, and even change how they smell. Therapeutics, on the other hand, are goods that assert to “change a physical process or prevent, diagnose, cure or alleviate any disease, ailment or defect.” This difference conveys that anti-dandruff shampoo and antiperspirant are categorised as therapies, whilst deodorants and shampoos are placed in the cosmetics category.\(^{(4)}\) Toothpaste, conditioners, shampoo, mascara, styling gel, creams, after-shave balm, lotions, powders, lipsticks, perfumes and nail polish, , hair wavers, eye and facial make-up, deodorants, hair dye and sprays are just a list of few products that fall under the category of cosmetics.\(^{(5)}\)

Facewash

Face washes functions as a gentle cleanser which keeps skin germ-free, clean, fresh and smooth. It also hydrates the inner layer of the skin with no damage to it, making it look young and vivacious. Face washes may be used to impart cleansing, anti-wrinkle, anti-acne, moisturising, and skin fairness properties.\(^{(6)}\) Face wash is a mild liquid soap that deeply cleanses pores. It is the simplest way to remove excess oil, makeup, and dust from the skin. It gently cleanses the face, resulting in skin that is clean and radiant. It is a hygienic and practical method for caring of skin.\(^{(7)}\)
Herbal face wash

Acne and pimples are treated using herbal face washes. Herbal Face Wash eliminates excess oil without eliminating nutrients from the skin and contains rich plant-based components like feverfew and neem. The base for finished herbal goods is a herbal preparation, which can be composed of powdered or comminuted herbs or extracts, tinctures, and fatty oils of herbs. In addition, they bear concoctions prepared using heating or steeping herbal compounds in honey, alcoholic beverages, or other substance. Herbal preparations created from one or more herbs make up finished herbal goods. The term "mixed herbal product" refers to preparation where more than one herb is utilised. Excipients also form a part of final herbal preparation (in addition to herbal extracts of main ingredients).

Table 1: Advantages and disadvantages of using facewash

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Remove scars, dead skin cells, sun tan.</td>
<td>Skin irritation, such as redness and inflammation, is caused by the use of harsh chemicals and vigorous motion use.</td>
</tr>
<tr>
<td>It deals with flaky skin hence imparts glow to skin making it soft and smooth to touch.</td>
<td>Excessive washing can leave pores open, exposing skin to UV radiation and pollution at the same time.</td>
</tr>
<tr>
<td>Rejuvenation of skin</td>
<td>Additionally, it makes the skin more vulnerable to infection and sunburn. After washing, proper moisturising leaves pores open, making it easier for dirt to adhere to them.</td>
</tr>
<tr>
<td>Increases blood circulation</td>
<td>This increases the risk of acne on the skin because of bacterial growth in dirt. Additionally, it dries out the skin.</td>
</tr>
<tr>
<td>These are mild and compatible with skin and hairs</td>
<td>The manufacturing process is labor-intensive and complex.</td>
</tr>
</tbody>
</table>

Collection
Fresh and good quality Neem and Tulsi leaves, orange peel, cumin seeds, honey, lemon and rosewater were purchased from local market to use in the formulation of a herbal facewash.

Preparation of extracts
i. Neem, Tulsi, and orange peel leaves were dried at 45°C in a hot air oven before being ground into small bits with a grinder.
ii. The desired amounts of herbal ingredients were weighed, and were macerated in a conical flask with rose water separately.
iii. Rose water and dried herbs were mixed together over the course of three successive days by gently shaking the conical flask.
iv. After three days, the contents were removed using a straight forward filtration procedure, and the each filtered extract was collected in separate container.

Filtration
Extract was filtered twice using simple filter muslin cloth and funnel.

Evaporation
Water baths were used to facilitate evaporation. In a water bath set to 60°C, filtrates were allowed to evaporate. Temperature should be maintained until the appropriate extract concentration was reached.

Development of Formulation :-
a) The necessary amount of xanthium gum, a gelling ingredient, was properly weighed, mixed slowly to prevent air bubbles formation, and then allowed to soak overnight in lukewarm rose water (NMT 60°C).
b) By gently swirling, the desired amount of honey was combined with the necessary amount of lemon juice.
c) The desired amount of concerted above extracts were then mixed with leftover rose water which was in turn combined with the honey blend above.

d) Above prepared blend is gently mixed with the xanthum gum gel that had been soaked overnight with rose water.

e) Final prepared formulation was put into the proper container and given the appropriate label.\cite{14}

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
Ingredient & Uses & Quantity for 50 ml \\
\hline
Neem & antiseptic, antibacterial & 2.5 ml \\
\hline
Tulsi & antibacterial, anti-inflammatory, complexion enhancing & 1.5 ml \\
\hline
Cumin & Calming effect, anti-inflammatory, Age defying & 1 ml \\
\hline
Honey & Emollient, nutritious, antibacterial, and astringent, as well as a thickening agent & 2.5 ml \\
\hline
Orange tincture & Anti-oxidant, antimicrobial & 0.5 ml \\
\hline
Lemon & skin lightening and pH balancer & 0.5 ml \\
\hline
Xanthan gum & Agent of stabilisation and thickening & 1 gm \\
\hline
Rose water & Solvent & q.s \\
\hline
Propyl paraben & Preservative & 0.05mg \\
\hline
Methyl paraben & Preservative & 0.03mg \\
\hline
Sodium Lauryl Sulphate (SLS) & Foaming agent & 1.05g \\
\hline
\end{tabular}
\caption{Prepared Herbal Formulation}
\end{table}

\textbf{Physical evaluation}

The following examinations are part of the physical assessment:

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
Evaluation parameters & Prepared Herbal & \\
\hline
Color & Reddish brown & \\
\hline
Consistency & Semi-solid & \\
\hline
Appearance & Good & \\
\hline
\end{tabular}
\caption{Physical evaluation}
\end{table}

\textbf{Physical evaluation}

\textbf{Washability}

The herbal face wash was applied to the face before being quickly removed with water and personally examined.\cite{15-16}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{washability.png}
\caption{Washability test of prepared herbal face wash}
\end{figure}

\textbf{pH test}

The pH metre was used to determine the herbal face wash's pH. The pH of the herbal face wash is tested using the following procedure\cite{17}:

- Switch on the digital pH meter.
- Then calibrated with the normal water.
- A calibrated digital pH metre was used to measure the pH of the formulation's 1% aqueous solution at a fixed temperature.
- Next, turn the digital pH metre off.
Irritancy test

The skin care products' irritancy tests are crucial. Skincare products that irritate people could lead to a wide range of issues. For the irritancy test, on the left hand's dorsal surface, a square centimetre of face wash was applied, and 1 to 2 hours of observation followed. The prepared herbal face wash doesn't irritate skin, therefore it wasn't irritating when it was made.\(^\text{[18]}\)

Viscosity

Using a Brookfield Viscometer, the viscosity of a herbal face cleanser was measured.\(^\text{[19]}\) The herbal face wash's viscosity is evaluated using the steps below:

- Switch on the Brookfield viscometer.
- Select a spindle next to learn how viscous the herbal face cleanser is.
- Next, measure how viscous the herbal face wash is.
- Then the values obtained for herbal face wash was noted.

\textbf{Fig. 4: Viscosity determination by the Brookfield viscometer}

Spreadability

The cream was spread between two slides, about 500 mg total. The upper slide was loaded with a 100g weight. Extra formulation was scraped off and weight was reduced. The upper slide was attached with nonflexible rope while the bottom slide was fixed to the apparatus's board and loaded with 20g. The time it took the higher slide to slide off was recorded.\(^\text{[20]}\)

\textbf{Foaming test}

A small amount of prepared herbal facewash was applied over face during the foamability test. It produces foam when it is applied on the face. Application of the face wash to skin in contact with water allowed for the analysis of foamability.

Grittiness

The grittiness test is used to determine whether there are any gritty particles in the formulation. By applying the herbal face wash to the skin to test for the presence of any gritty particles, it was determined that "no gritty particles" were present.

\textbf{Table 4: Comparison of Prepared herbal formulation with marketed formulation}

<table>
<thead>
<tr>
<th>Evaluation parameters</th>
<th>Prepared Herbal Formulation</th>
<th>Marketing formulation (1) Himalaya face wash</th>
<th>Marketing formulation (2) Patanjali Neem Tulsi Face wash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Reddish brown</td>
<td>Green</td>
<td>White</td>
</tr>
<tr>
<td>Consistency</td>
<td>Semi-solid</td>
<td>Semi-solid</td>
<td>Semi-solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Washability</td>
<td>Easily washable</td>
<td>Easily washable</td>
<td>Easily washable</td>
</tr>
<tr>
<td>pH test</td>
<td>7.41</td>
<td>7.29</td>
<td>7.91</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1118.1cp</td>
<td>1120.9cp</td>
<td>1122.4cp</td>
</tr>
<tr>
<td>Irritancy test</td>
<td>Non-irrtant</td>
<td>Non-irrtant</td>
<td>Non-irrtant</td>
</tr>
<tr>
<td>Spreadability</td>
<td>2.5cm</td>
<td>2.3cm</td>
<td>2.2cm</td>
</tr>
<tr>
<td>Foamability</td>
<td>Easily foam produced</td>
<td>Easily foam produced</td>
<td>Easily foam produced</td>
</tr>
</tbody>
</table>
CONCLUSION

The idea that natural medicines are safer and have fewer negative effects than synthetic ones makes them more acceptable. There is a huge demand for herbal cosmetics because their use has multiplied far too much in the personal care industry. Biological activities of the skin are impacted by the use of bioactive chemicals in cosmetics, which also supply the nutrients required for healthy skin or hair. Generally speaking, plants provide a variety of vitamins, antioxidants, different types of oils, essential oils, hydrocolloids, proteins, terpenoids, and other bioactive compounds. Among popular acne prevention product is herbal face cleansers, which cleanses and moisturises skin at same time. These are ideally used as per physiology of oily and dry skin. It offers a variety of vital nutrients needed to maintain healthy skin function and also enhances the skin's natural radiance. The demand for herbal formulations is rising on the global market. The effort to build the herbal face cleanser is excellent. This study showed how herbal formulations were created. Various plants, including Neem, Turmeric, Tulsi, Orange peel, Honey, and the calming ingredient Xanthan gum, were used to make the herbal face wash. These components benefit the face in positive ways. Checks and evaluations were made on the various characteristics, including colour, pH, consistency, washability, irritation, and spreadability. Therefore, it was determined from the current investigation that the herbal face wash formulation was proven to be more effective than the face wash that was being sold. Since all of the ingredients in this composition are herbal, they are safe for the skin and trustworthy.

Conflicts of Interest: The authors declare no conflict of interest.

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