https://doi.org/10.48047/AFJBS.6.10.2024.4622-4630

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

Comparative Analysis of Lemongrass Soap vs. Moringa Soap

Priti[1], Dr. Poonam singh[1,] Sandhya Yadav[2]

1. **M.Sc Student, Dept. Of Resource Management and Consumer Science, College Of Community Science, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya 224229**
1. **Assistant professor, Dept. Of Resource Management and Consumer Science, College Of Community Science, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya 224229**
2. **PhD Scholar, Dept. Of Resource Management and Consumer Science, College Of Community Science, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya 224229**

Article History

Volume6,Issue10,2024

Received:29Apr2024

Accepted:27May2024

doi:10.48047/AFJBS.6.10.2024.4622-4630

Abstract:

This study focuses on the formulation and assessment of herbal soaps using lemongrass and moringa extracts. Lemongrass and moringa are selected for their potential medicinal benefits and fragrance properties. The methodology involves collecting fresh leaves of both plants, extracting their juice, and incorporating it into soap base along with other ingredients. The prepared soaps are then assessed by selected respondents to evaluate their features such as usage rate, availability, fragrance, foaminess, moisturizing effect, and medicinal benefits. Statistical analysis is conducted to analyze the data, and preferences for herbal soap types and sources of awareness are also examined. The study aims to provide insights into the preferences and perceptions of herbal soap users and to develop optimized herbal soap formulations.

Introduction

Lemon grass, popularly known as citronella grass is a member of the Poaceae family and belongs to the genus Cymbopogon. The genus Cymbopogon constitutes of approximately 140 species that show widespread growth across the semi-temperate and tropical regions of Asian, American and African continents. Australia and Europe are home to only a few species of lemon grass. Also known as 'Squinant' in English, lemon grass is known by various other colloquial names throughout the world. The members of the Cymbopogon genus produce volatile oils and thus are also known as aromatic grasses **(kumar J, 2009 & Adhikari S, 2013).** The skin is the body's largest organ and its exposure to the environment makes it vulnerable to a wide range of skin diseases/ailments (hives, eczema, psoriasis, warts, acne, and other skin conditions). In order to avoid skin problems, it's important to keep the body's largest organ (and one that's constantly exposed to the elements) clean and free of any microbes that could be floating about outside **(There U G, et al & Joshi, et al. 2022)** .Skincare herbal formulations that fight fungi, bacteria and microbes may be made from any number of plant components, including the stem, leaves, roots, bark, flower, and fruit. These pharmaceuticals are often produced in the form of a cream, lotion, gel, soap, and ointment when they are intended for topical use. One of the most popular formulations for skincare and the treatment of skin ailments is herbal soap (**Sudharani M V, et al. 2023 & Kumar Sudheer K, et al. 2022)**. Soap is a salt of fatty acids that may be found in many household cleaning and personal care items. Soaps have several uses in the home, the most common of which are washing, bathing, and general cleaning **(Chavan, et al. 2021 & Vigneswaran, et al. 2022).** When triglyceride fats are hydrolyzed into free fatty acids, they may interact with alkali to make crude soap, a process known as saponification (**Sucharita G, et al. 2020)**.In most cases, soaps are manufactured using the melt-and-pour process, the hot press method, or the cold press method. The term soap is associate to any cleaning agent **(Draelos, 2018)**. Soaps are made of sodium or potassium hydroxide and natural fats. Soap is created when a fat interacts with an alkali, resulting in a fatty acid salt with cleansing properties. Soap removes dirt, stain, grease, inactivates viruses and microbes by disrupting the lipid membrane and intracellular lipids. Several studies indicate that soap as a more effective method of hand hygiene than hand rub. Hand washing with soap has the added benefit of physically washing away debris and pathogens with running water **(Levin and Miller, 2011).** There are 2 classification of soap, depend on a kind of alkali use, which are soap bar or sodium soap and liquid soap or called potassium soap. Many advantages of liquid soap, such as easy to use,

lower contamination, and several of formulation, all these reasons lead liquid soap products to commonly use in every day. Liquid soap is now commonly accepted because of its practical use and better appearance **(Anggraini et al., 2012).**

Methodology:

1. Locale of sample: The present study will be carried out in Ayodhya districts of State Uttar Pradesh because. The area of study is selected on the basis of availability of respondents and reach.

2. Selection of Sample Size: The total sample size of **120** will be selected by purposive for the present study. 60 respondents are male and 60 are female selected for study.

3.Variables for standardization of soap: Soap base, herbal extract, Vitamin E, colour, fragrance agent, and oil will be the variables used in the soap producing process, with the soap base, herbal extract, and oil being optimized and the other factors remaining constant. The variable will be finalized based on statistical data analysis and soap assessment. The soap will be developed utilizing an optimized process.

4. Selection of medicinal plants:

- Lemongrass
- Moringa

5. Preparation of herbal extract: Collect fresh leaves of Lemongrass and Moringa plant. Extract the Lemongrass and Moringa juice from leaves using mixer or mortar and pestle.

S.No	Ingredient for soap	Amount
1.	Soap base (in gm)	150gm
2.	Lemongrass, Moringa Plant extract (in ml).	75ml
3.	Oil (in ml)	2.5ml

6. Optimization &Preparation of herbal soap

Method: Melt the soap base using gas stove or any medium mix the extracted juice ten to fifteen minutes. With the soap base evenly and add desired colour and essential oil for better appearance and fragrance. After mixing all the materials, pour the mixture into mould for setting. Demould the soap after proper setting.

7. Assessment of Prepared herbal soap. The assessment of developed soap will be done by the selected respondents.

8. Product Development using best selected method.

The final product will be developed using the best optimal approach, and the product will be priced using the standard way.

Statistical Analysis of data: The data will be tabulated and analyzed with the help of descriptive (frequency, percentage).

Distribution of respondents according to their preference of features in Lemongrass soap:

S. No	Features	Frequency (%)					
		Usage rate	**Availability**	**Fragrance**	**Foamy**	**Moisturizer**	**Medicinal benefits**
1.	**Excellent**	70 (58.3%)	71 (59.1%)	60 (50%)	58 (48.3%)	55 (45.8%)	59 (49.1%)
2.	**Very Good**	40 (33.3%)	40 (33.3%)	48 (40%)	51 (42.5%)	48 (40%)	48 (40%)
3.	**Good**	10 (8.3%)	9 (7.5%)	12 (10%)	11 (9.1%)	17 (14.1%)	13 (10.8%)
4.	**Average**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
5.	**Poor**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%

Usage rate: 58.3% of respondents find the soap's usage rate to be excellent followed by 33.3%, 8.3% very good, good, respectively.

Availability: 59.1% of respondents rate the soap as having excellent availability followed by 33.3%, 7.5% very good, good, respectively.

Fragrance: 50% of respondents consider the fragrance of the soap to be excellent followed by 40%, 10% very good, good, respectively.

Foamy: 48.3% of respondents find the soap to be excellent in producing foam followed by 42.5%, 9.1% very good, good, respectively.

Moisturizer: 45.8% of respondent’s rate the soap as excellent in moisturizing the skin followed by 40%, 14.1% very good, good, respectively. While **Saurav *et al.* (2022)** in study revealed that moisturizer in soap help the skin to become soft.

Medicinal benefits: 49.1% of respondents perceive the soap as having excellent medicinal

benefits followed by 40%, 10.8% very good, good, respectively.

Distribution of respondents according to their preference of features in Moringa soap:

S. No	Features	Frequency (%)					
		Usage rate	Availability	Fragrance	Foamy	Moisturizer	Medicinal benefits
1.	Excellent	18 (15%)	16 (13.3%)	24 (20%)	34 (28.3%)	43 (35.8%)	70 (58.3%)
2.	Very Good	18 (15%)	15 (12.5%)	49 (40.8%)	43 (35.8%)	36 (30%)	15 (12.5%)
3.	Good	60 (50%)	63 (52.5%)	29 (24.1%)	26 (21.6%)	31 (25.8%)	21 (17.5%)
4.	Average	12 (10%)	15 (12.5%)	10 (8.3%)	8 (6.6%)	6 (5%)	6 (5%)
5.	Poor	12 (10%)	11 (9.1%)	8 (6.6%)	9 (7.5%)	4 (3.3%)	8 (6.6%)

Usage rate: 15% of respondents find the soap's usage rate to be excellent followed by 15%, 50%, 10% and 10% very good, good, average and poor respectively.

Availability: 13.3% of respondents rate the soap as having excellent availability followed by 12.5%, 52.5%, 12.5% and 9.1% very good, good, average and poor respectively.

Fragrance: 20% of respondents consider the fragrance of the soap to be excellent followed by 40.8%, 24.1%, 8.3% and 6.6% very good, good, average and poor respectively.

Foamy: 28.3% of respondents find the soap to be excellent in producing foam followed by 35.8%, 21.6%, 6.6% and 7.5% very good, good, average and poor respectively.

Moisturizer: 35.8% of respondents rate the soap as excellent in moisturizing the skin followed by 30%, 25.8%, 5% and 3.3% very good, good, average and poor respectively. While **Saurav *et al.* (2022)** in study revealed that moisturizer in soap help the skin to become soft.

Medicinal benefits: 58.3% of respondents perceive the soap as having excellent medicinal benefits followed by 12.5%, 17.5%, 5% and 6.6% very good, good, average and poor respectively.

Distribution of respondents according to type of soap they prefer (N=120):

The data present in table shows that majority 39.1% of respondents prefer herbal soap, out of which 36.6% girls and 41.6% boys followed by 37.5% of respondents prefer medicated soap, out of which 40% girls and 35% boys. Homeopathic soap is preferred by 14.1% of respondents, with a slightly higher preference among girls (16.6%) compared to boys

(11.6%). Only 11.6% boys prefer other types of soap. Overall, the data highlighting herbal soap as the most favored option, followed by medicated and homeopathic soap.

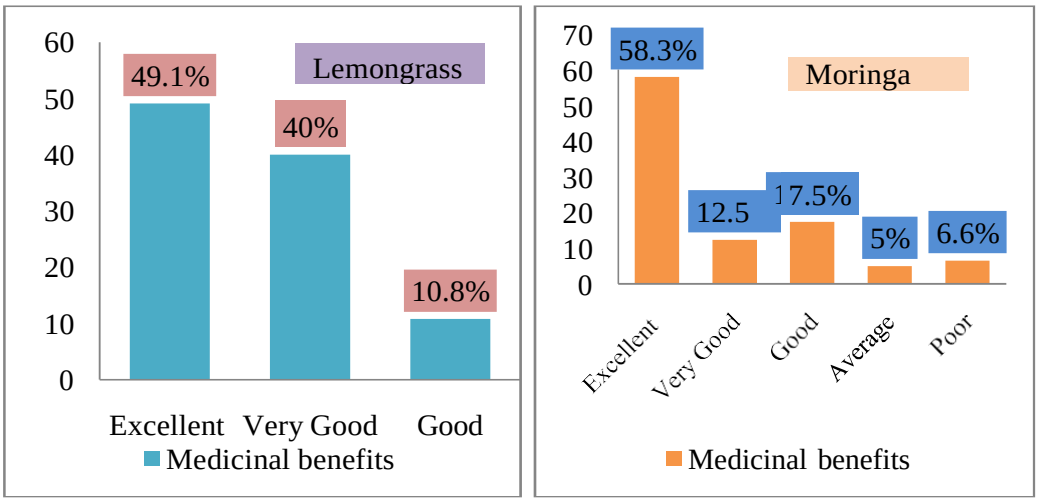
Soap preference	**f (%)**
Herbal	47 (39.1%)
Medicated	45 (37.5%)
Homeopathic	17 (14.1%)
Other	7 (9.1%)

Distribution of respondents according to source of awareness of herbal soap:

The data from Table illustrates that the more than fifty percent (56.6%) respondents are aware about herbal soap through advertisement followed by 40.8% through family and friends and only 2.5% are through recommendations by users. Overall, the data underscores that awareness of herbal soap is prevalent among both girls and boys, primarily through advertisements and personal networks.

Awareness of herbal soap	**f (%)**
Advertisement	68 (56.6%)
Family & friends	49 (40.8%)
Others (recommendations by users)	3 (2.5%)

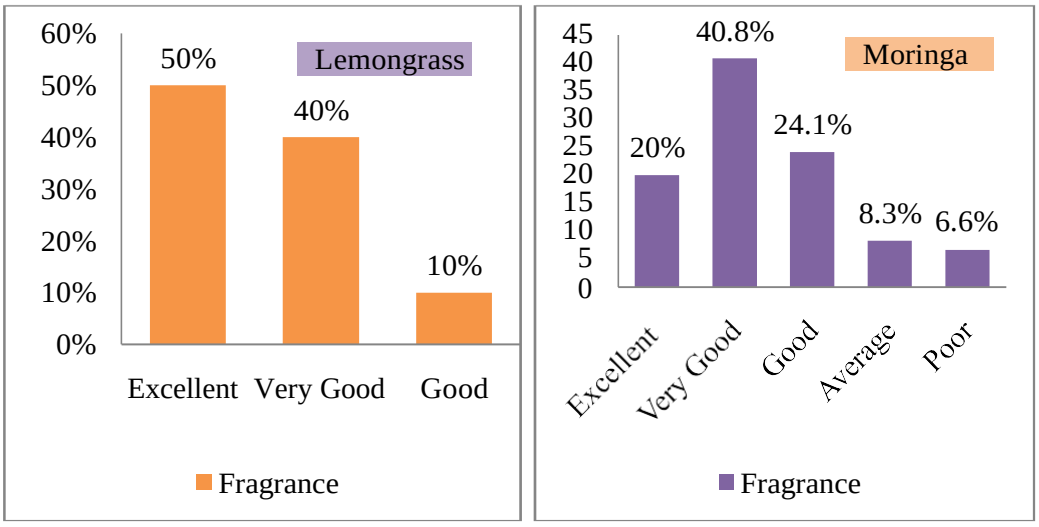
Comparison of Medicinal benefit between Lemongrass and Moringa soap



When comparing the perceived medicinal benefits between Moringa and Lemongrass soaps, Moringa soap is preferred by a larger percentage of respondents (58.3%) for its excellent medicinal benefits compared to Lemongrass soap (49.1%). However, Lemongrass soap receives a significantly higher rating (40%) for very good medicinal benefits compared to

Moringa soap (12.5%). Additionally, Moringa soap also has a higher percentage of respondents (17.5%) rating its medicinal benefits as good compared to Lemongrass soap (10.8%). while Moringa soap is perceived to have superior medicinal benefits overall, with higher percentages of respondents rating it as excellent and good compared to Lemongrass soap, Lemongrass soap garners a notably higher rating for very good medicinal benefits.

Comparison of fragrance between Lemongrass and Moringa soap



In the comparison between the fragrances of lemongrass and moringa, lemongrass emerges as the clear favorite due to its overwhelmingly positive reception. A significant 50% of respondents rated lemongrass' fragrance as excellent, while only 20% did so for moringa, indicating a strong preference for lemongrass' aroma. Both lemongrass and moringa received similar ratings in the "Very Good" fragrance category, suggesting that while moringa's scent is generally well-liked, it doesn't match the exceptional status attributed to lemongrass. However, moringa did receive more favorable ratings in the "Good" category, showing a broader appeal, though not as remarkable as lemongrass. Overall, lemongrass maintains a stronger and more consistently positive impression, Moringa's smell gets different reactions from people, some really like it, while others don't like it much.

Summary Conclusion:

The study reveals that both lemongrass and moringa soaps have their distinct characteristics and perceived benefits. Lemongrass soap receives higher ratings for fragrance, with a significant preference for its aroma among respondents. On the other hand, moringa soap is favored for its perceived medicinal benefits, particularly in terms of excellent and good

ratings. While lemongrass soap is preferred for its very good medicinal benefits, moringa soap emerges as the overall preferred choice for medicinal properties. Additionally, the study highlights herbal soap as the most favored type among respondents, with awareness primarily driven by advertisements and personal networks. Overall, the findings provide valuable insights for the development and marketing of herbal soap products, catering to diverse consumer preferences and needs.

Reference:

1. Adhikari S, Bandopadhyay TK, Ghosh PD, Assessment of genetic diversity of certain Indian elite clones of Cymbopogon species through RAPD analysis, *Indian Journal of Biotechnology*, 12, 2013, 109-114.
2. Anggraini, D., Rahmides, W.S., dan Malik, M. (2012). Formulasi sabun cair dari ekstrak batang nanas (*Ananas comosus*. L) untuk mengatasi jamur *Candida albicans*. *Jurnal Penelitian Farmasi Indonesia,* 1: 30–33.
3. Bothe saurav, prof. bhalsing pooja gorakh, prof. niranjan tiwari, kasar bharat. (2022). *A review on herbal soap, journal of emerging technologies and innovative research,* 8(**9**): 319-328.
4. Chavan, et al. A research on formulation and evaluation of herbal skin soap, *International Journal of Research in Pharmacy and Pharmaceutical Sciences,* 2021; 6(**3**): 22-26.
5. Draelos, Z.D. (2018). The science behind skin care: cleansers. J Cosmet Dermatol, 17 **(1**), pp. 814.
6. Joshi, et al. Fabrication and Valuation of Poly Herbal Soap Via Utilizing A Variety Of Herbal Extracts, *IJCRT*, 2022; 10(**3**): 187-193.
7. Kumar J, Verma V, Goyal A, Shahi AK, Sparoo R, Sangwan RS, Qazi GN, Genetic diversity analysis in Cymbopogon species using DNA markers, *Plant Omics Journal*, 2, 2009, 20-29.
8. Kumar Sudheer K, et al. Formulate and evaluate the herbal bath soap" using extracts of three plants having ethnic and dermatological importance in ayurveda, namely azadirecta indica, curcuma longa, ocimum tenuiaflorum, Neuroquantology, 2022; 20(12): 1055-1062.
9. Levin, J, R. Miller. (2011). A Guide to the ingredients and potential benefits of over-the-counter cleansers and moisturizers for rosacea patients. J Clin Aesthetic Dermatol, 4 (**8**), pp. 3149.

10. Sucharita G, et al. Formulation and Evaluation of Poly Herbal Anti Bacterial Soap, *IJESC*, 2020; 10(**8**): 27165-27173.
11. Sudharani M V, et al. Formulation and Evaluation of TridaxProcumbens (L.) Herbal Soaps, *Journal of Pharmacy*, 2023; 3(**1**): 1-8.
12. There U G, et al. Formulation of Hand Made Soap by using Goat Milk, *International Journal for Research in Applied Science & Engineering Technology*, 2022; 10(**2**): 955-960.
13. Vigneswaran, et al. Formulation and evaluation of poly herbal soap, *World Journal of Pharmaceutical and Medical Research*, 2022; 8(**2**): 170–173.