

# Lemon Grass (Cymbopogon sp.) and Neem (Azadirachta sp.) Leaves as Herbal Soap

Regina E. Gloria, Ph.D.

**Abstract**— The study sought to determine the acceptability of lemongrass (Cymbopogon sp.) and neem (Azadirachta sp.) leaves as herbal soap to treat or cure common skin health problems in selected person in Barangay Bagumbayan Lynville Subdivision Phase 1, Santa Cruz, Laguna and considered the result as basis for accepting herbal soap for treating common skin health problems as acne, rashes and scabies. In particular, it described the process involved in making lemongrass and neem leaves as herbal soap. It also determined the level of acceptability of lemongrass and neem leaves as herbal soap in treating common skin health problems. Sensory qualities such as appearance, aroma, color, texture, and shelf-life were also determined in finding the over -all level of acceptability of herbal soap. Using experimental method of research, a checklist survey questionnaire and observation, data were gathered from 50 -selected persons who have common skin health problems. Mean and standard deviation were also used to analyze the statistical data gathered in the study. It was revealed that herbal soap has highly acceptable in terms appearance, aroma, color, texture, and shelf-life and has acceptable in in terms of aroma and texture. Thus, the herbal soap was highly accepted and can really help in curing common skin health problems.

**Index Terms**— lemongrass, neem leaves, herbal soap, skin problems, acceptability

## 1 INTRODUCTION

Summer is the most enjoyable time to relax and unwind for many people in the Philippines. It is the best time to go and play outside and to rest under the trees. One of the best trees that can be used to shade many people is the neem tree which gives much shade. It is abundantly grown in some part of the local community. In fact, it can also be grown anywhere or in any types of soil it grows so easily. But, as always known, due to the very hot season or climate plus the effect of global warming there are many skin disorders that may arise. One of the most problems is scabies and prickly heat in many children. Aside from it, are allergies, acne, wounds, and head lice due to too much exposure under the sun and some other factors such as dirt, dust, and lot of sweat. There is much commercial soap that can be used to remedy those skin disorder that are available in the market. But some of it also contains harmful chemicals that may cause some worst reactions and negative effects on the part of the users. Aside from it, the commercial soaps are too expensive.

The neem tree is known as the tree for all season because of its versatility. It is useful for skin care as acne and keeping skin elasticity. It can also be a source of environment - friendly biopesticides. its main chemical content Azadirachtin which bis very effective in insect - growth regulating activity. In addition, lemongrass is highly regarded as traditional herbal doctors for its profuse healing qualities. Infusion of lemongrass is said to be good for fire element and an effective treatment for conditions from too much wind. Its essential oils are reputed to contain a substance similar to insulin and, therefore can be used in the treatment of diabetes. Its mild citrus flavor affirmed that lemongrass indeed contains organic repellent against mosquitoes as such a versatile herb, source of aroma and garden ornamental and its fragrance can be used as herbal soap. Of course, many people always wanted to treat and cure skin disorders and due to this factor, an herbal soap from lemongrass and neem leaves can be used to treat the skin problems for many children, teenagers, women and men too nowadays. This study was conducted to determine the over -

all acceptability of lemongrass and neem leaves as herbal soap in treating common skin health problems. This was conducted in Barangay Bagumbayan, Lynville Subdivision phase 1, Santa Cruz, Laguna.

## 2 OBJECTIVES

The study's general objective was to prove that Lemon Grass and Neem Leaves are effective components of creating an herbal soap. Moreover, it also aimed to:

1. Determine the Level of Acceptability of lemongrass and neem leaves as herbal soap in terms of:
  - a. Appearance
  - b. Aroma
  - c. Color
  - d. Texture
  - e. Shelf-life

## 3 METHODOLOGY

The experimental method of research was used in the study to determine the over - all acceptability of lemongrass and neem leaves as herbal soap in treating common skin health problems on its sensory qualities in terms of appearance, aroma, color, texture and shelf - life as rated by the respondents. The researcher used lemongrass and neem leaves as herbal soap to treat or cure common skin health problems in 50 selected persons in Barangay Bagumbayan Lynville Subdivision, Phase 1, Santa Cruz, Laguna. The methods of preparation were 1. Preparing all the materials needed 2. Dissolving caustic soda in three cups of water and stir slowly. Store the lye solution for six hours or overnight. 3. Prepare the chopped herbal leaves 4. In a lye solution, add coconut oil and stir slowly to have thick mixture. 5. Continue stirring until thick mixture is obtained. 6. Prepare the molder. 7. Store 1 - 2 weeks at the most before using. 8. Wrap the soap

to make it presentable. Then, the respondents were requested to evaluate the finished product. The data were put in the table, analyzed, and interpreted. Finally, making the generalization of the study. In producing lemongrass and neem leaves as herbal soap, the researcher encountered difficulties to improve the product. Trials and revision were done to obtain favorable results. In trial 1, nothing had been formed. It was absolutely an error because of too much caustic soda and even the molder was dissolved. In trial 2, the product was soft and oily. Lessening of oil was applied. Then, in trial 3, the herbal soap was rough and formed a heterogeneous mixture. It was almost perfect, but the color needed an enhancement in trial 4.

Finally, in trial 5, the final product was obtained. The materials, utensils and equipment's used in the study were caustic soda, neem leaves and lemongrass stalk extract, olive oil, virgin coconut oil essence, water plastic basin, wooden spoon, measuring device and molder. The total cost of the herbal soap preparation was Php. 210.00. A questionnaire checklist were used to determine the over-all acceptability of Lemongrass and neem leaves as herbal in terms of appearance, aroma, color, texture and shelf-life as evaluated by 50 selected respondents in Barangay Bagumbayan, Lynville Subdivision, Phase 1, Santa Cruz, Laguna using the following scale 5 - highly acceptable, 4 - acceptable, 3 - moderately acceptable, 2 - less acceptable, and 1 - not acceptable. In this study, the applied formula was processed to test the proportion in its quantitative relation to the whole weighted mean and standard deviation.

#### 4 LITERATURE REVIEW

Mineral oil (MO) was selected because it is extensively used in hair oil formulations in India, because it is non-greasy in nature, and because it is cheaper than vegetable oils like coconut and sunflower oils. The study was extended to sunflower oil (SFO) because it is the second most utilized base oil in the hair oil industry on account of its non-freezing property and its odorlessness at ambient temperature. As the aim was to cover different treatments, and the effect of these treatments on various hair types using the above oils, the number of experiments to be conducted was a very high number and a technique termed as the Taguchi Design of Experimentation was used. The findings clearly indicate the strong impact that coconut oil application has to hair as compared to application of both sunflower and mineral oils. Among three oils, coconut oil was the only oil found to reduce the protein loss remarkably for both undamaged and damaged hair when used as a pre-wash and post-wash grooming product. Both sunflower and mineral oils do not help at all in reducing the protein loss from hair [3].

According to [6] Lemongrass has been used in medicine in India for more than 2000 years. It has been used for its

carminative and anti-spasmodic activity. A tea made with lemongrass is useful for fevers. However, Lemongrass is rich in irritating aldehydes and should always be diluted down prior to use.

Lemongrass (*C. citratus*) as well as its active component, citral, exhibited high antibacterial activity against *Haemophilus influenzae*, penicillin-susceptible and resistant *Streptococcus pneumoniae*, *Streptococcus pyogenes* and *Staphylococcus aureus* by gaseous contact. The authors concluded that the antimicrobial action of essential oils by gaseous contact is most efficient when exposed at high vapour concentration for a short time period [7]. Lemongrass is sour, cooling and astringent. Therefore, it combats heat and tightens tissues of the body. It acts particularly on the connective tissue, where structural and immune functions meet. Lemongrass acts on the lymphatic capillaries and vessels draining away from the skin so it is useful in edema and lymphatic congestion [8].

On the other hand, Neem leaves contain potent antioxidants such as quercetin and nimbolide which can protect against the damaging effects of free radicals [9]. Harmful free radicals are known to damage DNA and have been implicated in conditions such as diabetes, heart disease, and cancer. They also play a role in aging. Neem-based supplements and remedies may help you keep these free radicals at bay.

Diluted neem oil has been used in Southeast Asia for ages as a remedy for skin infections. Its components like nimbolide and gedunin show antifungal and antibacterial properties and can be useful to clear an infection [10]. Neem leaf extracts have also been found to exhibit antifungal properties against organisms which cause skin disorders such as *Tinea versicolor*. A paste of the leaves can be used topically to treat skin infections [11].

Neem oil can be also used as a natural mosquito repellent. One study found that applying 1 to 4% neem oil diluted in coconut oil offered 81–91% protection against anopheline mosquitoes which transmit malaria. Another study observed that it also protected against *Aedes* mosquito, which spreads dengue, chikungunya, yellow fever, and the Zika virus [12].

#### 5 DISCUSSION

In this study data were gathered from 50 selected respondents with common skin health problems using lemongrass and neem leaves as herbal soap.

**Table 1.** Level of acceptability of lemongrass and neem leaves as herbal soap in terms of appearance

Sensory qualities in terms of appearance	Mean	SD	Remarks
1.The lemongrass and			

neem leaves are appealing in terms of its appearance	4.35	0.63	Highly Acceptable
2.The product is attractive in terms of its appearance	4.20	0.65	Acceptable
3.the product has almost perfect appearance	4.32	0.75	Highly Acceptable
4. the product has unique appearance	4.25	0.64	Highly Acceptable
5. the product is acceptable in terms of appearance	4.42	0.64	Highly Acceptable
Total	4.31	0.34	Highly acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable
- 1.00 – 1.80 Not Acceptable

The table shows that the respondents strongly agreed that the Lemongrass and Neem leaves as herbal soap is highly acceptable in terms of appearance with overall mean value of 4.31 and SD of 0.34. This states that the lemongrass and neem leave as herbal soap is attractive and appealing and has a unique appearance and is acceptable in terms of appearance. [5] emphasizes the main reason why appearance is important in making herbal soap. Eye or sense of sight is one of the five senses that the body has. It makes everything easier. The stimulation that eye affect greatly on brain responds. The brain will tell to choose the safest options that people can have.

**Table 2.** Level of acceptability of lemongrass and neem leaves as herbal soap in terms of aroma

Sensory qualities in terms of aroma	Mean	SD	Remarks
1.The lemongrass and neem leaves has satisfying fragrance.	4.53	0.56	Highly Acceptable
2. the product is relaxing in terms of aroma	4.55	0.62	Highly Acceptable
3. the product has a very pleasing odor.	4.52	0.62	Highly Acceptable
4. the product does not cause irritation to the nose.	4.2	0.65	Acceptable
5. the product is acceptable in terms of aroma	4.48	0.53	Highly Acceptable
Total	4.48	0.28	Highly Acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable

1.00 – 1.80 Not Acceptable

The table shows that the respondents strongly agreed that the Lemongrass and Neem Leaves as Herbal Soap is highly acceptable in terms of aroma with over all mean value of 4.48 and SD of 0.328. This states that lemongrass and neem leaves herbal soap is highly acceptable in terms of aroma as it has satisfying fragrance and relaxing and pleasing odor and dose not cause irritation. [6] says “Of the countless numbers of plants in the vegetable kingdom a large percentage of lemongrass possess aromatic odor hence it was designated as being the essence of plants as “Essential oils”

**Table 3.** Level of acceptability of lemongrass and neem leaves as herbal soap in terms of color

Sensory qualities in terms of color	Mean	SD	Remarks
1.Lemongrass and neem leaves is attractive to the eyes	4.2	0.78	Acceptable
2. Lemongrass and Neem leaves is comparable with other commercial soap	4.2	0.78	Acceptable
3. The herbal soap is pleasing to the eyes	4.2	0.78	Acceptable
4. The product is in natural color.	5.0	0	Highly Acceptable
5.The lemongrass and neem leaves herbal soap acceptable in term of color	4.4	0.84	Highly Acceptable
Total	4.2	0.58	Acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable
- 1.00 – 1.80 Not Acceptable

The table shows the level of acceptability of lemongrass and neem leaves as herbal soap in terms of color. It indicates that the respondents agreed that the lemongrass and neem leaves is acceptable in terms of color with an overall mean of 4.2 value and an SD of 0.58. This means that the herbal soap comparable to other commercial soap and the product is natural in color. The study of Mendoza, S.A. (2012) Madre de Cacao as dog soap found out that dog soap was acceptable in color and that the dog soap was attractive to the eye and can also be comparable to the commercial soap.

**Table 4.** Level of acceptability of lemongrass and neem leaves as herbal soap in terms of texture

Sensory qualities in terms of texture	Mean	SD	Remarks
1. Lemongrass and neem leaves herbal soap is soft and smooth to the skin when use.	3.15	1.09	Acceptable
2. The product is hard enough to hold on.	3.60	0.99	Acceptable
3. The product is thick and appropriate enough to use.	3.95	1.15	Acceptable
4. Lemongrass and neem leaves herbal soap does not dissolve easily.	4.25	0.97	Acceptable
5. Lemongrass and neem leaves herbal soap is acceptable in terms of its texture.	4.10	1.07	Acceptable
Total	3.81	1.05	Acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable
- 1.00 – 1.80 Not Acceptable

The table shows that the respondents agreed that the Lemongrass and neem leaves as herbal soap is acceptable in terms of texture with an overall mean value of 3.81 and an SD of 1.05 and that lemongrass and neem leaves herbal soap is soft and smooth and appropriate enough to use and does not dissolve easily. The study of [1] entitled "Efficacy of Lemongrass as Insect Repellent" found out that the product was acceptable in terms of texture and acceptable as new insect repellent. [4] affirmed that mallunggay leaves extract soap can be made into herbal soap which the result obtained excellent and very good and was acceptable in terms of texture.

**Table 5.** Level of acceptability of lemongrass and neem leaves as herbal soap in terms of shelf – life

Sensory qualities in terms of shelf – life	Mean	SD	Remarks
1. the lemongrass and neem leaves herbal soap has an ideal shelf -life.	4.43	0.62	Highly Acceptable
2. the product meets the consumer expectation in terms of its shelf – life.	4.3	0.59	Highly Acceptable
3. the product has good quality in terms of its shelf-life	4.23	0.67	Highly Acceptable
4. the product maintain its	4.38	0.64	Highly Ac-

effect from 3 – 5 hours.			ceptable
5. The lemongrass and neem leaves herbal soap is acceptable in terms of its shelf – life.	4.41	0.61	Highly Acceptable
Total	4.35	0.30	Highly Acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable
- 1.00 – 1.80 Not Acceptable

The table shows that the respondents strongly agreed that the Lemongrass and neem leaves as herbal soap is highly acceptable in terms of its shelf – life with an overall mean value of 4.35 and SD of 0.30. It indicates that lemongrass and neem leaves herbal soap has an ideal shelf – life and that the product meets the consumer expectations and has good quality in terms of shelf – life and maintains its effect from 3 – 5 hours. These outcomes were similar with the study conducted by [2], on "Acceptability of Acapulco and Madre de Cacao Soap. They found out that the sensory qualities of her product were highly acceptable by their respondents.

**Table 6.** The overall level of acceptability of lemongrass and neem leaves as herbal soap

Sensory Qualities	Mean	SD	Remarks
1. Appearance	4.31	0.34	Highly Acceptable
2. Aroma	4.48	0.28	Highly Acceptable
3. Color	4.2	0.58	Acceptable
4. Texture	3.81	1.05	Acceptable
5. Shelf - life	4.35	0.30	Highly Acceptable
Total	4.23	0.67	Highly Acceptable

Legend:

- 4.21 – 5.00 Highly Acceptable
- 3.41 – 4.20 Acceptable
- 2.61 – 3.40 Moderately Acceptable
- 1.81 – 2.60 Less Acceptable
- 1.00 – 1.80 Not Acceptable

The table revealed that the overall level of acceptability of lemongrass and neem leaves as herbal soap in terms of appearance, aroma and shelf – life were highly acceptable and color and texture were acceptable with a total mean value of 4.23 and SD of 0.67 which were rated by the respondents who have common skin health problems. The study conducted by

Malinawan, H.D. (2018) which entitled "Guava Leaves Soap" who were evaluated b as highly acceptable by the respondents was almost the same but different in the color of the finished product. The study of Malinawan, H.D., affirms that guava leaves can be made into soap that the result of the study was good and based on the findings of the study it revealed that lemongrass and neem leaves herbal soap is highly acceptable in terms of appearance, aroma and shelf – life and acceptable in terms of color and texture.

## 6 CONCLUSION

Preparation of the materials needed, dissolving, chopping, adding, and stirring mixing, molding, storing, and wrapping or packaging were the procedure in making lemongrass and neem leaves as herbal soap. Lemongrass and neem leaves herbal soap was highly acceptable in terms of appearance, aroma, and shelf – life while color and texture were rated as acceptable by the respondents who have common skin health problem as the overall level of acceptability.

## 7 RECOMMENDATION

Based on the findings and conclusions of the study, the recommendations are

1. all the family members and all the persons having common skin health problems such as acne, rashes, and scabies maybe encourage to use the lemongrass and neem leaves herbal soap as a substitute disinfectant and medicine for commercial and expensive healing soap.
2. Further study maybe made to improve the quality of lemongrass and neem leaves as herbal soap. Also, future researchers may use this as their reference when doing other research work about herbal leaves.
3. Unemployed person make lemongrass and neem leaves herbal soap as an additional income.
4. The local government mis recommended to support the funding or giving free seminars for the production of lemongrass and neem leaves herbal soap in the community as an alternative medicine to help its constituents.
5. And finally, it is highly recommended to plant lemongrass and neem trees in the backyard or in the community as source of herbal medicine.

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