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ACCEPTABILITY AS LOCAL HERBS OF DRIED LEMONGRASS POWDER (Cymbopogon citratus)

Mae D. Lapore, Jhanin D. Selibio, Carlos Vladimir G. Estrella, Jessa Jhane P. Tamesis, Johanna Grace J. Udto, and Cyche G. Hisona
West Visayas State University-Himamaylan City Campus, Brgy. Caradio-an, Himamaylan City, 6108, Philippines

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ABSTRACT

This study explored the acceptability of dried lemongrass (Cymbopogon citratus) powder as a local herb, specifically its sensory properties (aroma, appearance, flavor, and texture), and its possible use in food, health/nutrition, and medicine. The researchers used a quantitative experimental research design to prepare dried lemongrass powder through freeze-drying and to assess its sensory properties using a modified 9-point Hedonic Scale. The sensory evaluation included 36 purposively selected respondents, made up of experts, parents, faculty, staff, and students. The results demonstrated that regardless of the attribute, the product was rated "very acceptable", with the appearance yielded the highest rate of acceptability. The inferential analysis revealed that there were no statistically significant differences between the acceptability ratings for each of the attributes examined ($p > 0.05$), suggesting positive perception was consistent across all attributes. The findings substantiate that dried lemongrass powder is a potential alternative to traditional herbs and is suitable for diverse populations, food products, small batch products, and herbal products. As a whole, the study concludes that there is substantial potential for dried lemongrass powder to be utilized in product development while supporting sustainability in agriculture and serving health conscious consumers.

KEYWORDS: *Dried Lemongrass, Cymbopogon Citratus, Local Herbs, Sensory Evaluation And, Freeze-Drying*

INTRODUCTION

Background of the study

Lemongrass (CymbopogonCitratus) is derived from the typical lemon-like odor of the essential oil present in the shoot. It belongs to poaceae family and it is a tall, perennial grass in a class of about 45 species of grasses native to the tropical and subtropical climates of Australia and Africa. Lemongrass has a calming aroma it also offers numerous health benefits. It can be used as a culinary spice, an ingredient in1 herbal drinks, or even as a natural insect repellent. In Africa and Latin America cultures, lemongrass is frequently used to make tea it's either fresh or dried.

India is one of the leading producers of lemongrass, with over 2 million pounds grown annually, especially in the Western Ghats and the foothills of Arunachal Pradesh and Sikkim in the Himalayas. Lemongrass was introduced in India nearly a century ago and is now cultivated for commercial purposes. This plant can grow as tall as 10 feet in favorable conditions, such as during moist summers in nutrient-rich soil. The plant has layers similar to a corn husk, with tough green outer layers and a softer core. In Asian cuisine, the lower stalk is commonly used for its mild citrus flavor in dishes like soups, poultry, and seafood, and it can be used fresh, dried, or powdered. Beyond cooking, lemongrass oil is also used as a natural insect repellent. Additionally, lemongrass is widely recognized in traditional medicine for treating various ailments. According to Kamaruddin, Jumaidin, Rushdan, Selamat & Alamjuri (2021), lemongrass is well known as a source of cellulose, hemicellulose and lignin. It has antiseptic, antibacterial, antifungal, and anti-inflammatory properties.

In the Philippines, lemongrass is referred to as "tanglad" in the Visayan language. It is used in traditional herbal medicine by some and is popular in Filipino cuisines including tinola, lechon baboy, and inasal na manok. Lemongrass is a natural diuretic, contains antioxidants that help fight bodily toxins, reduces mouth infections and cavities, helps manage body odor, and helps repair skin and joint issues, Kamaruddin et al. (2021).

Given the aforementioned facts, this study is aimed to investigate the nutritional value, health advantages, therapeutic benefits, and culinary applications of dried lemongrass powder [CymbopogonCitratus], as there is a dearth of research on the subject. Having a local herb as a resource serves as the foundation for the creation of tea, food flavorings and ingredients, herbal capsules, and insect repellents. According to Thorat, Solanke, Ughade, Mane & Desai (2022), lemongrass contains a variety of health-promoting essential oils, compounds, minerals, and vitamins that are known to have anti-oxidant and disease-preventing qualities. Pantothenic acid (vitamin B5), pyridoxine (vitamin B6), thiamin (vitamin B1), vitamin C, and other vital vitamins are found in the herb components. Minerals such as potassium, zinc, calcium, iron, manganese, copper, and

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magnesium is abundant in it. Given its nutritional advantages, lemongrass is frequently used as an ingredient in the making of a wide range of culinary products, including beverages, herbal or isotonic drinks, dairy and baked goods, meat products, and more.**2.**

Theoretical Framework

New product development refers to the complete process of bringing a new product to market. This can apply to developing an entirely new product, adding features to an existing one to keep it attractive and competitive, or introducing an old product to a new market. Maintain a competitive advantage in the market by introducing new products or innovating existing ones (Gastaldello 2025) companies can effectively navigate the product development process and gain insights into the potential challenges associated with introducing a new product into an existing market, as customer preferences evolve with technological advancements. New product development (NPD) is the process of creating and launching a new product or service, or relaunching an existing service or product. It is a structured process with the objective of turning an idea into reality. The NPD process is made up of a series of simple steps (Safety Culture, August 2025). By working through each step, entrepreneurs or executives may be better positioned to pursue the right idea, do the right research and create a product development pipeline that can be replicated.

Methodology

Research Design

The researchers used quantitative research design. Quantitative research methodology is preferred by many researchers. It discusses the proper use and the components of quantitative research methodology, Mohajan, H. K. (2020). It is used to quantify attitudes, opinions, behaviors, and other defined variables and generalize results from a larger sample population by the way of generating numerical data.

Participants and Inclusion Criteria

There will be 36 respondents in this study, composed of 6 Chef of restaurants, 10 parents, 10 students, and 10 Faculty and Staff of West Visayas State University- Himamaylan City Campus. The respondent's distribution of the sample was identified using purposive sampling.

Data Analysis Procedure

The accomplished questionnaires collected, the data will be tabulated and analyzed using the appropriate statistical tool.
Mean and standard deviation were used in the descriptive and scientific analysis to evaluate the process of making dried lemongrass powder into a new product using the adapted instrument as assessed by the participants.

To answer the objective number 1, Evaluate the benefits of Dried Lemon grass powder (CymbopogonCitratus) as a Local Herbs: Basis for Product Development in two treatments as a whole in terms of, Culinary Uses, Health Benefits, Nutritional Value, Medicinal Benefits based on analysis?

To answer objective number 2, What products can be developed from dried lemon grass powder whether tea, food flavoring/ ingredients, herbal capsule and insect repellent.

Ethical Considerations

The researchers will request permission to the campus administrator to collect the data. Following approval, the researcher will get the respondents' informed consent. Throughout the survey, individuals will be informed that participation is entirely voluntary and that they can opt out if they feel uncomfortable. Additionally, they will guarantee that the language used in the message's content is understandable and straightforward. Respondents will remain anonymous throughout the actual survey process. Information from the respondent will be gathered in the strictest confidence.

RESULTS AND DISCUSSIONS

Table 1
Descriptive Data Analysis

Level of Sensory Acceptability of Dried Lemon Grass Powder as Alternative to Local Herb in Terms of Appearance, Aroma, Taste, Texture and General Acceptability as Assessed by the Respondents

Attribute	*N*	Mean	*SD*
Appearance	36	8.42	.81
Aroma	36	8.25	.97
Taste	36	8.14	1.46
Texture	36	8.39	.80
General	36	8.30	.76

Note: 8.51-9.00 Highly Acceptable; 7.51-8.50 Very Acceptable; 6.51-7.50 Moderately Acceptable; 5.51-6.50 Slightly Acceptable; 4.51-5.50 Neither Acceptable/Unacceptable; 3.51-4.50 Slightly Unacceptable; 2.51-3.50 Moderately Unacceptable; 1.51-2.50 Very Unacceptable; 1.00-1.50 Highly Unacceptable

The present study's findings indicate that dried lemongrass (Cymbopogon citratus) powder is rated as "very acceptable" in terms of appearance, aroma, taste, texture, and overall acceptability by 36 participants. Appearance (M = 8.42, SD =

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0.81) received the highest score, followed by Texture (M = 8.39, SD = 0.80), Aroma (M = 8.25, SD = 0.97), General Acceptability (M = 8.30, SD = 0.76), and Taste (M = 8.14, SD = 1.46). The data indicated that dried lemongrass powder is positively viewed in all attributes measured. In general, the results of the study indicate its strong potential to serve as an alternative local herb. However, given its lower preference score in taste, adjustments could be made to improve that dimension. A better knowing of how consumers receive dried lemongrass powder can help inform improvements or product development going forward.

According to a study conducted by Savadogo, Nacoulma, and Bassole (2020) on the use of dried lemongrass powder in local cuisines, sensory scores for aroma, taste, and overall liking were all rated high. Results indicate that lemongrass powder was a highly effective sensory quality enhancer for food materials, which indicates its potential as an aromatic and flavoring agent.

Similarly, Wang, Gao, and Ma (2021) examined lemongrass tea powders made by spray drying and noted that sensory panelists rated appearance, aroma, taste, and overall acceptability as highly acceptable to very highly acceptable. Therefore, the findings support the strong potential of using dried lemongrass powder in beverage applications, consistent with the high mean values of appearance (8.42) and texture (8.39) in the current study which showed favorable sensory perceptions.

Moreover, Mishra and Sutar (2022) created herbal powdered blends enriched with lemongrass used for food fortification, both accepted and liked by subjects, based on sensory attributes of taste, aroma, and texture.

Additionally, Aini, Kurnia, and Wangiyana (2022) undertook a sensory evaluation on lemongrass beverages, reporting high hedonic scores for appearance, aroma, and taste, thus further validating lemongrass's ability to produce herbal products that are not only acceptable but also desirable.

Table 2
Inferential Data Analysis and Discussion
Differences in the Sensory Acceptability as Local Herb of Dried Lemongrass (Cymbopogon citratus)

Sensory Attribute	*N*	Mean Rank	Kruskal-Wallis *H*	*df*	*P*-value
Appearance	36	76.00	.682	3	.877
Aroma	36	70.39			
Taste	36	69.67			
Texture	36	73.94			

*p> .05, not significant

The table illustrates the sensory acceptability of dried lemongrass (Cymbopogon citratus) powder as an alternative to local herbs for appearance, aroma, taste, and texture. A Kruskal-Wallis H test was utilized to determine whether any significant differences existed regarding the acceptability ratings among sensory attributes (e.g., appearance, aroma, taste, texture). Results illustrated no significant difference in acceptability with H = 0.682, p value = 0.877, indicating participants rated the acceptability of dried lemongrass powder appearance, aroma, taste, and texture fairly similarly and positively. Furthermore, the mean scores represented by sensory attribute obtained evidence all attributes in the rating scale were classified as 'Very Acceptable' based on reliability of means: appearance (M = 8.42), aroma (M = 8.25), taste (M = 8.14), texture (M = 8.39), and acceptability (M = 8.30).

CONCLUSIONS

The results of this study provide strong evidence that dried lemongrass (Cymbopogon citratus) powder is widely acceptable as a local herb based on the sensory characteristics of aroma, appearance, taste, and texture. The average scores for all factors rated were high, with appearance and texture being notably rated factors. No major differences for all sensory characteristics also supports quality and consumer recognition of the product's acceptability as a local herb. The results suggest that dried lemongrass powder could be an attractive and versatile alternative to commercial herb options that supports traditional and modern cooking and medicinal use. The dried lemongrass powder has strong potential for product development, localized business development, and increased usage of local herbs given its natural health benefit potential, and availability. This type of product may also encourage sustainable agriculture and health-oriented consumer behavior in the surrounding community.

RECOMMENDATIONS

Based on the results of the study, were drawn to recommend that local entrepreneurs, food manufacturers, and community-based enterprises explore the development and commercialization of dried lemongrass powder in various forms, such as tea, food seasoning, herbal capsules, and even insect repellents. Educational campaigns should be conducted to raise public awareness about the nutritional and medicinal benefits of lemongrass, which may encourage wider acceptance and use. Furthermore, culinary professionals and chefs are encouraged to experiment with the product in their dishes for convenience and consistency, especially in regions where access to fresh herbs is limited. We, the researchers suggest that farmers would collaborate with local producers to ensure a stable supply chain of quality lemongrass, which could lead to new income-generating opportunities and promote sustainable practices.

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Lastly, future researchers are encouraged to investigate other preservation methods, explore additional applications, or study the shelf-life and bioactive properties of the powder to strengthen its potential in both local and global markets.

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