

Sambong (*Blumea balsamifera*) Candy as Alternative Remedy for Cough

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Abstract: This study investigates the potential of Sambong (*Blumea balsamifera*) candy as an alternative remedy for cough. Utilizing a quantitative developmental research design, the study evaluated the candy's basic nutritional composition, sensory attributes, and acceptability among participants. The results indicate that the candy is highly effective in terms of taste, texture, and appearance, with an overall acceptability rating of "Like Extremely." The nutritional analysis revealed a low moisture content (3.78 g/100) for extended shelf life and minimal cholesterol (<5 mg/100), making it suitable for health-conscious consumers. The study highlights the candy's potential as a cost-effective, plant-based alternative for managing cough symptoms, offering a novel delivery method for herbal remedies. Further research is recommended to validate its efficacy in larger populations and explore its integration into modern medical practices.

Keywords: Sambong, Candy, Alternative Remedy, Sensory Evaluation

I. INTRODUCTION

Cough is a typical respiratory symptom that helps in clearing the airways of viruses, mucus, and irritants. As stated by Bergmann *et al.* (2021), cough is one of the most frequent reasons for an encounter in primary care. Pharmaceutical cough medicines are commonly utilized, although some people have adverse effects like nausea and drowsiness. Consequently, there is increasing interest in natural substitutes that might offer relief with fewer side effects.

The medicinal plant known as sambong (*Blumea balsamifera*) has been used for a long time in traditional medicine to treat a variety of respiratory conditions. Mondejar *et al.* (2024) stated that it is used to treat colds, coughs, and kidney problems. It is known to have antibacterial and anti-inflammatory qualities, which may help reduce coughing by addressing underlying infections or inflammation in the respiratory system. This was also

emphasized by Benjamin (2025) that the plant is characterized by its aromatic leaves and essential oils, which are believed to be responsible for its medicinal activity.

Studies have indicated that sambong contains bioactive compounds, such as flavonoids and terpenes, which contribute to its therapeutic effects. Phytochemical analysis conducted by Jose *et al.* (2024) revealed that bioactive compounds including flavonoids and terpenoids are found in sambong which are known for their anti-inflammatory, antioxidant, and diuretic effects.

However, sambong is most frequently consumed as a tea or decoction, which some people may find inconvenient due to its strong, distinct taste and the time required for preparation. These factors may discourage regular use, especially among children and people who prefer more convenient and easily accessible alternatives.

Sambong has not been well investigated in more accessible and consumable forms, despite its potential benefits. Teas and decoctions are examples of traditional preparations that take time and effort to make, making them impractical for those with hectic schedules. Making sambong-based products in novel forms, such as candy, could offer a more useful option while maintaining its medicinal benefits. Candies are a potentially useful and accessible cough remedy since they are simple to eat, don't need to be prepared, and may be made to preserve the healthful ingredients of sambong.

Given the limited availability and high cost of branded pharmaceutical products in remote areas, exploring the efficacy of natural remedies is crucial. The use of herbal medicines has been a promising alternative in these situations (Mondejar *et al.*, 2024). Sambong candies may offer a convenient, portable substitute for conventional herbal remedies. Candies can be consumed anytime, anywhere, and don't need to be prepared like teas or syrups do. They are therefore a sensible option for anyone looking for a cough cure that doesn't need brewing or monitoring dosages. With that being said, this study aimed to investigate the potential of *Blumea balsamifera* candy as an alternative remedy for cough through sensory evaluation. In this context, this research explores the process of making gummies out of herbal extracts, focusing on the use Sambong (*Blumea balsamifera*) candy as alternative remedy for cough. The primary aim was to enhance the product's convenience, making it a viable alternative supplement for everyone.

This study aimed to investigate the potential of *Blumea balsamifera* candy as an alternative remedy for cough. Specifically, it assessed the basic nutritional facts and the general acceptability of the candy as an alternative remedy for cough in terms of appearance, aroma, taste, and texture. The findings may provide a reasonably priced and convenient substitute for treating coughs, particularly in areas without easy access to pricy pharmaceutical choices. Furthermore, future researchers can advance this study's knowledge of the potential of *Blumea balsamifera* candy as a cough treatment and open the door for its incorporation into conventional medical procedures.

II. METHODOLOGY

The study employed a developmental research design to develop an alternative remedy manufactured from Sambong (*Blumea balsamifera*). The researchers used quota and purposive sampling to determine their participants based on specialization and expertise. This design was appropriate for the study because the researchers created a product, which in this case was a candy and evaluated the product if it is recommended to be a convenient alternative remedy for cough. The study was conducted in four phases (1) Preparation of *Blumea balsamifera* leaves, (2) Production of *Blumea balsamifera* candy, and (3) Basic Nutritional Facts Analysis, and (4) Food Sensory Evaluation. The study aimed to provide the characteristics of the resulting product in terms of appearance, aroma, taste, and texture of Sambong (*Blumea balsamifera*) candy as alternative remedy for cough.

The researchers used the Hedonic Rating Scale in which a numerical rating from 1 to 9 will determine the rate of acceptability of the product, in which 1 indicates "Dislike Extremely" and 9 indicates "Like Extremely" adopted from Ambid *et al.* (2024). Meanwhile, Descriptive Rating Test was used to provide a detailed description of the product's sensory evaluation. Additionally, this study enlisted people through quota and purposive sampling, comprising experts such as food experts, T.L.E. teachers, Parents, Nutritionist, and Pharmacist. They were adults who have attained a minimum age of 18 years who participated in this research. Before involvement, individuals got relevant details on this evaluation and gave their consent on evaluating the product.

Ingredients	f (g)	(P) %
Sambong Leaf Extract	300	65.22
Sugar	125	27.17
Menthol	5	1.09
Glucose Syrup	30	6.52
Total	460	100

Table 1. Summary of the Used Ingredients

Table 1 presents the summary of ingredients used in the formulation, with *Blumea balsamifera* leaf extract comprising the highest proportion at 300 g (65.22%), emphasizing its role as the primary functional component known for diuretic (Rasonabe *et al.*, 2024). In contrast, menthol, at 5 g (1.09%), provides a cooling effect and enhances flavor, aligning with findings by Vaiphei & Joseph (2023) on its medicinal, nutritional, and organoleptic qualities.

III. RESULTS AND DISCUSSION

This chapter presents the results and discussion of the data obtained from the responses of fifteen (15) respondents of selected food experts. Those data were carefully analyzed, presented, discussed, and interpreted according to the perimeter of this research to answer the problem sought for this study.

Parameters	Units	Value	Methods
Moisture	g/100	3.78	Vacuum Oven Drying
Cholesterol	mg/100	>5	Gas Chromatography (FID)
pH	-	4.53 @22.1 °C	Electrometry
Carbohydrates	%	94.5	By Computation
Ash	%	0.0748	Ignition-Gravimetric
Fat	%	0.721	Mojonnier Extraction Method
Protein	%	0.946	Kjeldahl

Table 2. Basic Nutritional Facts Analysis of Sambong (*Blumea balsamifera*) as Candy

The basic nutritional facts analysis of candy made from *Blumea balsamifera* is shown in table 2. Using the Vacuum Oven Drying method, the moisture content was found to be 3.78 g/100, indicating a relatively low water content that contributes to the product's extended shelf life and helps prevent microbial growth and spoilage. Lower moisture levels in food products inhibit the growth of bacteria, yeasts, and molds, which thrive in moist environments. This also improves the stability of the candy by preventing texture degradation, such as stickiness or crystallization, which can occur with higher moisture content. Additionally, a low water content reduces the need for artificial preservatives, making the product more natural while maintaining its quality over time. The findings agree with that of Jafarzadeh *et al.* (2021) & Farcuh *et al.* (2018), the major problem of preserving fruits and vegetables is their short shelf life because of their high moisture content (75–95%) which is leading to rapid deterioration and decay of these products and undesirable appearance. As highlighted by Ahmad, M. & Ahmad, I (2021) that the decrease of moisture content from the prepared samples is due to the evaporation taking place in the given atmospheric conditions that were present during the study.

Through Gas Chromatography (FID), it has been observed that the cholesterol content was determined to be >5 mg/100 which is found to be consistent with the recommendations for low cholesterol foods and makes it more appealing to health-conscious consumers. These findings support with that of Kailey *et al.* (2024) that herbal (made from herbs) products have lesser effects, more therapeutic effects, and health benefits. The advantages of herbs used in candy manufacturing are safe, with good efficacy, lower side effect, compatibility with the human body, and wide cultural acceptability.

The cholesterol content of the sambong candy was found to be greater than 5 mg/100 g, as determined using Gas Chromatography with Flame Ionization Detection (FID). This suggests that while the product contains some cholesterol, the amount remains relatively low compared to animal-based food products. The presence of

cholesterol may be attributed to specific ingredients used in the formulation, such as flavoring agents or emulsifiers. However, given that confectionery products typically have minimal cholesterol content, this level is unlikely to have significant dietary implications for most consumers. As highlighted by Margolies *et al.* (2022), this may help the nutritional and dietary problem in the Philippines, as stunting remains a persistent problem among rural and urban children under the age of five. Since 2015, overweight has been increasing and now affects more than 15 percent of urban schoolchildren and adolescents.

The pH of the sambong candy was measured at 4.53 at 22.1°C using electrometry, indicating that the product is slightly acidic. This level of acidity is typical for confectionery products, as it can enhance flavor, contribute to product stability, and inhibit the growth of certain microorganisms. The pH value suggests that the formulation maintains a balance between acidity and sweetness, which may affect both taste and preservation. Additionally, the slightly acidic nature of the candy may help maintain the stability of the active compounds in *Blumea balsamifera*, ensuring its intended properties are retained. The findings are consistent with Wati *et al.* (2024) that the type of natural extract added to alternative candy has a significant effect on the final pH value of the product. The influence of pH on the organoleptic quality and stability of honey candy is an important aspect in selecting natural extracts for candy formulation.

The ash content of the sambong candy was determined to be 0.0748% using the ignition-gravimetric method, indicating the presence of inorganic minerals and trace elements. Ash content in food products represents the total mineral composition, which may include essential nutrients such as calcium, potassium, or magnesium, depending on the ingredients used. While the percentage is relatively low, it suggests that the candy contains minimal residual mineral content, which is typical for confectionery products. This value also provides insight into the purity of the ingredients and the overall composition of the product. The findings contradict to the result of Ahmad, M. & Ahmad, I. (2021) that high ash content was found in candy sample which contains higher concentration of syrup of the alternative candy. Diana *et al.* (2024) further noted that ash content is one of the determining parameters of hard candy, because the lower the ash content, the better the appearance of the candy.

The fat content of the sambong candy was measured at 0.721% using the Mojonnier Extraction Method, indicating a relatively low fat composition. This aligns with the typical nutritional profile of hard candy, which primarily consists of carbohydrates rather than fats. The presence of a small amount of fat may be attributed to certain ingredients used in the formulation, such as flavoring agents or emulsifiers. While the fat content is minimal, it may still contribute to the texture and mouthfeel of the candy, potentially enhancing its overall sensory properties. As highlighted by Faturoti & Ogidi (2025), confections without herbs or spices are often high in sugar and fat, which can contribute to their rejection by adults and immunocompromised individuals due to their health concerns.

The protein content of the sambong candy was measured at 0.946% using the Kjeldahl method, indicating a low protein composition. This is expected in confectionery products, as they are primarily composed of carbohydrates and sugars rather than protein-rich ingredients. The small amount of protein present may come from trace components in the plant extract or other minor ingredients used in the formulation. The findings agree with that of Mondejar *et al.* (2024) that sambong has a protein content of >1.7%. While protein is not a significant contributor to the candy's nutritional value, its presence may still play a role in the overall composition and stability of the product.

Moreover, the carbohydrate content, comprising 94.5% by computation, indicates that the product is a carbohydrate-dense food, a typical attribute of confectionery products. This suggests that the candy primarily provides energy, as carbohydrates serve as the main source of caloric content. The high carbohydrate percentage is likely due to the presence of sugar and glucose syrup, which contribute to the candy's sweetness, texture, and structure. Additionally, the carbohydrate composition plays a role in the candy's stability, influencing factors such as hardness and shelf life. However, while the product offers a quick energy source, its high carbohydrate content may be a consideration for individuals monitoring their sugar intake. However, as stated by Assmus *et al.* (2021) that snacks mainly contained carbohydrates (median: 75.7, IQR: 61.0–89.2 energy%). Considering this, the observed integration of carbohydrate-dense snacks into the diet supports the growing evidence for a nutrition transition among African populations undergoing socioeconomic development. These observations suggest a product with formulation that is optimized for energy contribution, making it appropriate for people who want to meet dietary cholesterol limits while yet getting rapid energy boost.

Variable	M	SD	I
Appearance	8.40	0.74	LE
Aroma	8.20	1.15	LE
Taste	8.73	0.46	LE
Texture	8.80	0.56	LE
Average	8.53	0.73	LE

Table 3. The General Acceptability of *Blumea balsamifera* Candy as an Alternative Remedy for Cough through Food Sensory Evaluation

Scale	Interval	Interpretation
9	8.12 - 9.00	Like Extremely (LE)
8	7.23 - 8.11	Like Very Much (LVM)
7	6.34 - 7.22	Like Moderately (LM)
6	5.45 - 6.33	Like Slightly (LS)
5	4.56 - 5.44	Neither Like nor Dislike (NLD)
4	3.67 - 4.55	Dislike Slightly (DS)
3	2.78 - 3.66	Dislike Moderately (DM)
2	1.89 - 2.77	Dislike Very Much (DVM)
1	1.00 - 1.88	Dislike Extremely (DE)

Table 3 presents the general acceptability of *Blumea balsamifera* candy as an alternative remedy for cough through food sensory evaluation. It can be observed from Table 3 that among all attributes, texture obtained the highest score with 8.80 (mean) and 0.56 (SD), which is interpreted as "Like Extremely" (LE). This means that the evaluators highly accept the product's overall texture. As pointed out by the evaluators, the smoothness and hardness of the product enhance the ease and convenience of consuming the candy made from *Blumea balsamifera*. The findings agree with that of Ozel et al. (2024) that the texture of hard candies is another crucial quality parameter. Hard candies are amorphous, glassy systems that can experience changes in the desired texture and sensory properties. The best hard candy products are associated with a hard texture and a clear, glossy appearance. While sticky hard candies with pale color are usually not accepted by consumers.

The appearance of *Blumea balsamifera* candy received a mean (M) rating of 8.40 with a standard deviation (SD) of 0.74, indicating a high level of acceptability based on the Hedonic Rating Scale. The interpretation (I) of "LE" suggests that the taste was rated as "Liked Extremely" by the respondents. The high mean score and low standard deviation imply that most participants had a consistently positive perception of the candy's taste. This suggests that despite the natural bitterness or strong herbal flavor of *Blumea balsamifera*, the formulation successfully enhanced its palatability, making it more acceptable for consumption. The findings are consistent with that of Romano et al. (2024) s that taste with an average score of 8.50 which was classified as Like Very Much (LVM) based on the hedonic rating scale, demonstrates a commendable balance, with a pleasing fusion of sweetness and herbal undertones that resonated positively with the respondents.

The appearance of *Blumea balsamifera* candy received a mean (M) rating of 8.40 with a standard deviation (SD) of 0.74, indicating a high level of acceptability based on the Hedonic Rating Scale. The interpretation (I) of "LE" suggests that respondents rated the candy's appearance as "Liked Extremely." The relatively high mean score reflects a positive perception of the candy's visual appeal, while the standard deviation indicates slight variations in individual preferences. This suggests that the product's color, shape, and overall presentation met consumer expectations, contributing to its acceptability as an alternative remedy for cough. The findings supports Mondejar et al. (2024) that an 8.625 average score for appearance indicates a generally favourable perception, placing it within the "like very much" category based on the Hedonic Rating Scale. This suggests that respondents found the visual aspect of the product appealing, contributing positively to the overall aesthetic experience.

In contrast, Aroma received the lowest score, with a mean of 8.20 and a standard deviation of 1.15, interpreted as "Like Extremely" (LE). This means that aroma, while still highly appreciated, was the least favored attribute of the product, showing minimal variation among evaluators. As per evaluator, the natural and unique odor of the main ingredient is noticeable. Considering this, aroma is important in candy products since it not only improves their flavor but also gives them a unique, identifiable scent that makes them easy for

customers to recognize. As stated by Lopis et al. (2023) the odors are known to entertain a special link with memory. They are effective reminders of past experiences due to the special link they entertain with memory. Since the product does not involve ingredient with hydrocolloid, the findings disagree with that of Piccone et al. (2011) which states that which states that increasing the concentration of hydrocolloid ingredients in food formulations will increase the thickness of the related product, but increasing the concentration of these hydrocolloid ingredients actually reduces the original taste and aroma of the product.

On average, the product got the score of 8.53 (mean) and 0.73 (SD), interpreted as “Like Extremely” (LE). A high mean score suggests that the product successfully meet the evaluators expectations for attributes such as texture, tastes, appearance, and aroma, contributing to favorable overall perception. Despite some minor variations, indicated by the low standard deviation, the uniformity of the response’s points to the product’s well-balanced formulation.

Variable	M	SD	I
Appearance	3.60	0.51	HR
Aroma	3.53	0.74	HR
Taste	3.80	0.41	HR
Texture	3.87	0.52	HR
Average	3.70	0.55	HR

Table 4. The General Acceptability of *Blumea balsamifera* Candy as an Alternative Remedy for Cough through Product Recommendation.

Scale	Parameters	Verbal Interpretation
4	3.25-4.00	Highly Recommendable (HR)
3	2.50-3.24	Recommendable (R)
2	1.75-2.49	Not Recommendable (NR)
1	1.00-1.74	Highly Not Recommendable (HNR)

Table 4 shows the product of *Blumea balsamifera* candy as an alternative remedy for cough through product recommendation. From the table, it can be observed that among all attributes, Texture achieved the highest rating with a mean of 3.87 and SD of 0.52, categorized as “Highly Recommended” (HR). This result highlights that the product’s chewiness, firmness, and mouthfeel were significant contributors to its acceptability. A well-balanced texture ensures that the candy is neither too hard nor too soft, making it suitable for various age groups. Additionally, the relatively low standard deviation suggests that respondents had a consistent perception of the candy’s texture reinforcing its reliability as an alternative remedy for cough. The positive reception of texture may also indicate that the formulation effectively preserved the product’s intended properties while enhancing its palatability. Due to the presence of saliva and enzymes food is always being altered in the mouth, making texture as a dynamic process (Norton et al., 2021).

The taste of *Blumea balsamifera* candy received a mean (M) rating of 3.80 with a standard deviation (SD) of 0.41, categorized as *Highly Recommended* (HR). This suggests that the candy’s flavor profile was well-received by respondents, indicating that the formulation effectively balanced the natural taste of *Blumea balsamifera* with other ingredients to enhance palatability. Taste is a critical factor in the acceptability of functional candies, as herbal components often have strong or bitter flavors that may not appeal to all consumers. The relatively low standard deviation implies that most respondents had a similar positive perception of the taste, reinforcing the consistency of the product’s formulation. The high rating further suggests that the candy’s sweetness, herbal notes, and overall flavor contributed to making it a viable alternative remedy for cough.

The appearance of *Blumea balsamifera* candy received a mean (M) rating of 3.60 with a standard deviation (SD) of 0.51, categorized as *Highly Recommended* (HR). This indicates that respondents found the product visually appealing, which is an important factor in consumer acceptance. Appearance influences initial impressions and can affect willingness to try the product, particularly for herbal-based remedies that may have distinct colors or textures. The relatively moderate standard deviation suggests some variation in individual preferences, but overall, the candy’s color, shape, and clarity were well-received. A visually appealing product can enhance consumer confidence and contribute to its effectiveness as an alternative remedy for cough by encouraging consistent use.

In contrast, the lowest attribute was Aroma which was rated as 3.53 (M) and 0.74 (SD), also interpreted as *Highly Recommended* (HR), though it had the highest variability responses. While the score was favorable, the higher standard deviation suggests that perception of aroma differed more among evaluators. The natural scent of the *Blumea balsamifera*, though subtle, contributed positively to the sensory experience. This suggests that while some evaluators found the aroma pleasant, others may have had differing preferences or sensitivities to the herbal scent of *Blumea balsamifera*. Aroma plays a significant role in sensory appeal, as it can influence taste perception and overall product enjoyment. Despite the variation, the natural scent of *Blumea balsamifera*, though subtle, contributed positively to the sensory experience, reinforcing its identity as a functional confectionery product. This supports the findings of Pizzoni *et al.* (2015) that besides overall quality and acceptability, aroma compounds and pattern of foods are relevant aspects in relation to the origin of raw materials and ingredients and thus, their authenticity. This is a main issue for food producers even if consumers may not be able to discriminate among food products produced with ingredients and additives, flavoring agents included, of different type and origin.

The sensory evaluation of the candy product made from *Blumea balsamifera* yielded an average score of 3.70 (Mean) with a standard deviation (SD) of 0.55, interpreted as “*Highly Recommended*” (HR). This highlights that the product is recommendable having high level of acceptance among evaluators, reflecting the overall positive perception of the product’s quality and appeal. The moderate standard deviation reflects a reasonable level of agreement among the panelists, suggesting consistency in quality perception. This level of acceptability reinforces the potential of *Blumea balsamifera* candy as a viable alternative remedy for cough, demonstrating that its formulation was well-balanced to maintain both therapeutic benefits and sensory appeal.

IV. CONCLUSIONS

In conclusion, *Blumea balsamifera* candy is considered a potential alternative remedy for cough, with high acceptance both in sensory evaluation and product recommendation due to its favorable characteristics such as texture, taste, appearance, and aroma.

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