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Utilization of squash and banana floret as hair mask

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Abstract: This study developed a formulation of hair mask made of squash and banana floret and described the sensory qualities and general acceptability of the product. This experimental study employed 25 semi-trained panelists undergoing a Complete Randomized Design (CRD). The result of the experimental study revealed that hair mask has a potential alternative in hair treatment. The results also showed that in all treatments was very attractive in color, but it favors Treatment A more. All treatments have a very pleasant smell, and Treatment C (1,380g of squash) has excelled in texture. Treatment A (460g of squash) was generally acceptable and highly preferred by the consumers, while Treatment B was more effective in terms of smoothness and silkiness when applied to hair.

Keywords: Hair Mask, Hair Care, Conditioner, Beauty Product, Banana Floret

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INTRODUCTION

Shampoo and conditioner are essential components of hair care, primarily serving to cleanse and condition the hair superficially. In contrast, a hair mask offers a deeper level of nourishment and repair. Its thicker consistency allows for longer contact time with the hair, enabling the active ingredients to penetrate deeply into the hair shaft, providing intensive treatment. These results in enhanced hydration, repair of damaged hair, and improved overall hair health, surpassing the benefits of traditional shampoo and conditioner.

Squash and banana florets are naturally rich in vitamins, minerals, and antioxidants essential for hair health. Vitamins A and C in squash promote hair growth and scalp health, while antioxidants in banana floret repair damage and strengthen hair follicles. Together, they create a synergistic effect, nourishing, repairing, and protecting the hair, resulting in healthier and more resilient strands. They provide deep hydration, restoring moisture balance and preventing dryness and frizz, promoting softness, shine, and manageability without weighing down the hair. (Sachdev, 2022; Chia-Hua et al., 2023)

A healthy scalp is essential for optimal hair growth and vitality. The nutrients present in squash and banana floret help maintain scalp health by nourishing hair follicles, reducing inflammation, and promoting circulation. In cosmetology and beauty care, innovation is key to staying ahead of trends and meeting evolving client needs. Researching unconventional ingredients like squash and banana floret for hair masks demonstrates a commitment to exploring new formulations and techniques that could revolutionize hair care practices.

With the growing demand for natural and organic beauty products, incorporating these ingredients into hair mask formulations caters to the increasing preference for clean, green beauty solutions. Each individual's hair is unique, with varying needs and concerns. By delving into the formulation of hair masks using squash and banana floret, there's potential for creating customizable solutions that address specific hair types, textures, and conditions, aligning with the personalized approach popular in the beauty industry.

The researcher being a cosmetology educator believes that engaging in research allows for a deeper understanding of cosmetic chemistry, ingredient interactions, and formulation techniques. This knowledge is invaluable in teaching, enabling the imparting of practical, up-to-date information to students and empowering them to explore their creative formulations. Developing effective hair mask formulations using accessible, locally sourced ingredients like squash and banana floret can benefit individuals seeking natural hair care solutions and local communities involved in agriculture and sustainable practices. Promoting the use of locally grown produce in beauty formulations contributes to community resilience and economic empowerment, creating new ideas to share with students and demonstrating that vegetables in their backyard can be alternative hair care treatments, making learning more engaging and relevant.

Objective of the study

This study aimed to determine the general acceptability of squash and banana floret as hair mask in terms of color, consistency, scent and texture.

LITERATURE REVIEW

Benefits of hair mask

Siddiqui (2022) extols the virtues of natural hair masks, advocating for their efficacy in promoting hair and scalp health. Packed with fruit extracts, natural triglycerides, signature Vatika oil blends, and quaternary compounds, these masks offer consumers an unparalleled experience, locking in moisture, preventing frizz, and nourishing the scalp. The inclusion of

triglycerides aids in repairing the hair's surface and sealing split ends, while also imparting a lustrous shine and softness. Furthermore, the environmental packaging of these products addresses concerns regarding sustainability (Siddiqui, 2022).
Hair masks, as intensive conditioning treatments, play a pivotal role in hair repair, especially for individuals with dry, damaged, or frizzy hair (Hair Mask, 2020). Clinical studies, such as those conducted by Gandhi et al. (2023), underscore the effectiveness of organic hair masks in enhancing hair texture, shine, and manageability. Notably, research indicates that natural ingredients like squash and banana floret extracts exhibit promising results comparable to conventional hair care products (Gandhi et al., 2023).

Hair benefits of banana floret

For centuries, the banana peel, leaf, flower, and fruit have been used in different cultures as a treatment for various ailments. Research shows that the extracts of different parts of the banana do have antioxidant and antibacterial properties.Dandruff symptoms can be caused by irritation, dryness, as well as fungal and bacterial pathogens. Applying banana masks to your scalp can add moisture (cutting down on dryness) and rid your scalp of those microscopic offenders causing your dandruff symptoms (Savali et al., (2021).

Moreover, banana florets have outstanding medicinal properties, also known as a banana blossom or banana heart. It has a potent nutritional profile. Banana florets are packed with essential minerals such as phosphorus, calcium, potassium, copper, magnesium and iron, vital for several bodily functions. Banana florets contain various bioactive components, including several antioxidants with anti-inflammatory effects. Consuming banana floret extract for twelve weeks increased the hair root diameter and reduced hair loss and scalp redness compared to the placebo group. Thus, banana floret extract can stimulate hair growth and inhibit the activation of hair loss genes (Liang et al., 2023).

According to the study of Soni and Saxena (2021), antioxidants in bananas can also infuse your scalp and hair with a stronger defense system and decrease. Banana masks, over time, can lead to hair follicles that are stronger and, as a result, grow longer. Banana floret extract can help prevent and control dandruff, the scalp is the skin on your head, and the base of hair follicles.How the personnourish it and how healthy it is has a direct impact on hair follicle health. When scalp is not properly looked after, dryness and fungus forms, which in turn results in flaky scalp and dandruff. Using a banana for hair on a regular basis can prevent all of this (Ramu et al., 2017).

Moreover, Bananas can help improve hair texture which the bananas contain silica, which is known to eliminate frizz and improve the hair texture from within. It also contains natural oils, which benefit the hair strands and improves the hair structure. Using a banana can keep your hair smooth, and free of damage (Datta et al., 2021). In preventing split-ends with a banana maskwere an easy way of ensuring that your hair remains hydrated, nourished and moisturized in the most intense possible way, leading to effective prevention of split ends. Applying a banana mask along the ends of the hair prevents it from breakage, dry and damaged strands, and protects it from factors like pollution, UV rays, stress and lifestyle-related damage as well (Govindaraj, 2022).

Banana helps maintain hair elasticity, just one banana contains enough vitamin B6 to meet almost half your daily dietary needs! It is no wonder then, that the vitamin B6 content in bananas makes it a vital ingredient to boost the hair’s elasticity and strength. It enhances the hair’s structure, helps the hair to retain essential moisture and other nutrients, and keeps your mane from looking and feeling like it’s made of straw. Try out this banana hair mask to improve your hair’s elasticity (Schmidt et al., 2015).

Hair benefits of squash

Squash belongs to the cucurbitaceae family of vegetables and includes all sorts of pumpkins, melons, zucchinis, etc, Squash plants grow quickly; it is one of the most abundant vegetables in the Philippines, which is why it is not very expensive (Ferriol and Belén, 2017).

According to Moreno (2015), Squash is protected by a hard rind and grown in the country throughout the year; it is usually grown in backyard, and it is also marketable for its immature fruits, young shoots, flowers, and seeds. In culinary applications, squash is flexible. It is a very valuable, though still underestimated, raw material. Its fruits may be used to produce pomace juices and naturally turbid juices, pomaces and mousses, jams and marmalades, as well as candied and dried snacks. Also, it can be added to a soup, used for salads, can be baked whole or sliced, and can be added to other processed foods.

Squash (Cucurbita maxima) commonly known in the Visayan language as kalabasa, have long been used in the Philippines as fleshy vegetables. They belong to the plant family that includes melon and cucumber, come in many varieties. Some varieties of squash also produce edible flowers. While each variety may have a distinct shape, color, size and flavor, all varieties share some common characteristics. Regardless of variety, all parts of the squash are edible, including the flesh, seeds and skin or rind. Like other cucurbits, squash is recognized as an important source of vitamins and minerals just like vitamins A and C; it also contains calcium and iron. It has very low calories, ideal to be a component in the diet plan. These fleshy vegetables are protected by a hard rind and grown in the country throughout the year. To gain the full nutritional benefits of this vegetable, the green skins or rinds must be eaten. It is usually grown in backyard and it is marketable for its immature fruits, young shoots, flowers, and seeds (Gledhill, 2018).

METHODOLOGY

Research design

The developmental-experimental research approach was the technique employed in this investigation. The researcher carried out a comprehensive analysis of the body of research on the qualities, advantages, and uses of banana and squash blossoms as hair masks. To obtain knowledge on the subject, this entails looking through academic databases, scientific journals, books, and other pertinent sources. The plan was to carry out an experiment to assess the effectiveness of hair masks made of squash and banana blossoms. This entails creating various hair mask recipes, testing the masks on hair samples in the lab, and assessing how the masks affect factors related to hair health like shine, strength, and moisture retention.

The developmental focuses on the products were squash and banana floret, with three (3) treatments used with a varied amount of the aforesaid main ingredients. The experimental method focuses on the study in the future (what will be) when the variables or the study are carefully controlled or manipulated (Tabuena et al., 2021). Observation and evaluation sheets, or questionnaires, were used to gather data from individuals about their experiences with using squash and banana blossom hair masks.

Experimental treatment and proportion

The table outlines the ingredients and proportions used in three variations of a squash and banana floret hair mask, labeled as Treatment A, Treatment B, and Treatment C. Each treatment contains a combination of key ingredients aimed at providing nourishment, hydration, and conditioning to the hair and scalp. Squash was a primary ingredient in all three treatments, serving as the base of the hair mask. Squash is rich in vitamins, minerals, and antioxidants, which can help moisturize and strengthen the hair.

Ingredients and proportion of the squash and banana floret as hair mask per treatment.

Ingredients	Treatment A	Treatment B	Treatment C
Squash	460 grams	920 grams	1,380 grams
Banana Blossom Extract	225 ml	225 ml	225 ml
Cetyl Alcohol	100 grams	100 grams	100 grams
Honey	180 ml	180 ml	180 ml
Virgin Coconut Oil	75 ml	75 ml	75 ml
Scent	20 ml	20 ml	20 ml

Experimental Procedure

Preparation of Squash

The researcher first gathered and washed the squash with running water, scooped or removed the squash seeds, peeled the skin of the squash, sliced the squash using a kitchen knife, boiled the sliced squash in a large pot, and covered them with water. The water was brought to a boil over medium-high heat for the squash in a casserole until cooked, and the squash was allowed to simmer until it became tender when pierced with a fork or knife (the cooking time may have varied depending on the size and type of squash, but it usually took around 15–30 minutes). After that, the squash was mashed using a fork or spoon. Using the weighing scale, the mashed squash was weighed and measured, and then set aside.

Preparation of Banana Floret Extract

In preparing banana floret extract, the researcher first gathered the banana blossoms to be used. The banana blossom was washed with tap water, and the banana floret was removed from the banana blossom. The banana floret was then sliced into small pieces, pounded using a mortar and pestle, squeezed through cheesecloth, and the banana floret extract was measured and set aside.

Preparation of Squash and Banana Floret as Hair Mask

The researcher prepared the materials and ingredients used. She then measured all the ingredients using a gram and graduated cylinder and mixed them in a mixing bowl. She packed the hair mask product and labeled the finished product. Then, she applied the shampoo to the client's hair and rinsed thoroughly with water. After rinsing, she drained the water from the client's hair with a towel to dry. She sectioned the hair into three parts and applied the mask to the hair of the client by leaving it for about 20 minutes. Then, she rinsed the client’s hair with water and blow-dried the hair.

Evaluation Procedure and Analysis

The evaluation of squash and banana floret as hair masks was done with 25 evaluators consisting of 25 cosmetology teachers, 10 beauticians, and 5 consumers. The evaluation was done using an evaluation sheet established with a five-point Likert scale for the sensory qualities’ evaluation of the squash and banana blossom hair mask, its acceptability, and its effectiveness. The products were evaluated in terms of their sensory qualities using a five-point Likert scale for variables to determine their acceptability in terms of color, consistency, scent, and texture and the effectiveness of the product in terms of smoothing and silkiness when applied to the hair. Mean was used to determine the level of effectiveness and acceptability of the product.

FINDINGS AND DISCUSSION

Acceptability of squash and banana floret as hair mask

The general acceptability of squash and banana floret as hair masks was measured in this study across three treatments based on four sensory factors: color, consistency, scent, and texture. The acceptability scores ranged from 1.00 to 5.00, with higher scores indicating greater acceptability. The data showed that in terms of color, Treatment A gained a Mean score of 4.20, Treatment B had a mean score of 4.32, and Treatment C had a mean score of 4.36, all of which were verbally interpreted as "Very Acceptable." This indicated that all treatments received high scores for color acceptability, with Treatment C scoring slightly higher than the others. The hair masks were perceived as visually appealing, indicating that the color of the products was well-received by the users.

In terms of consistency, Treatment A had a mean score of 4.88, Treatment B had a mean score of 3.84, and Treatment C had a mean score of 3.28, and all treatments were verbally interpreted as "Very Acceptable." Moreover, Treatment A received the highest score for consistency acceptability, indicating that it had the most desirable texture among the treatments. Treatments B and C also received high scores but were slightly lower than Treatment A.

In terms of scent, Treatment A had a mean score of 4.44, Treatment B had a mean score of 4.36, both of which were verbally interpreted as "Very Acceptable." While Treatment C had a mean score of 3.88 and was only considered Acceptable. Moreover, Treatments A and B both received high scores for scent acceptability, indicating that the scents were well-liked by the users. Treatment C received a slightly lower score but was still considered acceptable.

In terms of texture, Treatment A had a mean score of 4.04, Treatment B had a mean score of 4.32, both of which were verbally interpreted as "Very Acceptable." While, Treatment C received a mean score of 3.96, which was verbally interpreted as Acceptable. Treatment B received the highest score for texture acceptability, indicating that it had the most desirable feel among the treatments. Treatments A and C also received high scores but were slightly lower than Treatment B. Overall, all three treatments were well-received in terms of general acceptability, with Treatment A generally scoring the highest across all sensory factors. The hair masks were perceived as very acceptable or acceptable in terms of color, consistency, scent, and texture, indicating their suitability for use as hair care products.

In the study of Gandhi et al. (2023), having favorable general acceptability in a hair mask, encompassing attributes such as color, consistency, scent, and texture, offered several advantages for both the product and the user, enhancing user satisfaction. They also reiterated that when the hair mask met or exceeded expectations in terms of color, consistency, scent, and texture, users were more likely to feel satisfied with their purchase and overall experience. Moreover, a hair mask with appealing sensory attributes reflected positively on the brand. Consumers associated high-quality sensory experiences with product efficacy and brand reputation. A product that looked, felt, and smelled good was perceived as more luxurious and trustworthy, enhancing brand perception and loyalty.

In the study of Madhunithya et al. (2021), they found out that users were more inclined to incorporate a hair mask into their regular hair care routine if they enjoyed using it. Favorable sensory qualities encouraged repeated use, leading to increased product consumption and potentially higher customer lifetime value for the brand. Satisfied users were more likely to recommend the hair mask to others based on their positive experience. Word-of-mouth recommendations were a powerful form of advertising, as they carried credibility and trust. A hair mask with favorable sensory qualities could generate positive

word-of-mouth buzz, leading to increased brand awareness and sales. Moreover, sensory attributes could differentiate a squash and banana blossom hair mask from competing products in the market. If the hair mask stood out for its appealing color, luxurious consistency, pleasant scent, and silky texture, it was more likely to attract consumers seeking unique and enjoyable hair care experiences.

Based on the results of the study by Savali et al. (2021), products with superior sensory qualities commanded a premium price in the market. Consumers were willing to pay more for hair masks that offered a luxurious sensory experience, as they perceived them as higher value and more indulgent compared to standard formulations. Favorable sensory attributes evoked positive emotions during product usage. Users may have felt pampered, relaxed, and indulged when applying the hair mask, enhancing their emotional connection to the product and fostering brand loyalty over time.

CONCLUSIONS AND RECOMMENDATION

Based on the findings, the squash and banana Floret hair mask demonstrated significant acceptability in terms of its effectiveness in improving hair smoothness and silkiness and Treatment B was very acceptable by the consumers. The implication is that consumers place a high value on smoothness and silkiness in their hair care products. Treatment B meets this preference effectively, leading to positive feedback and acceptance. Furthermore, Treatment B is potentially acceptable when preparing the hair mask product. It indicates that this treatment, along with its variants, meets the standards or criteria set for the hair mask product. This could include factors such as effectiveness, safety, sensory experience, and suitability for the intended purpose.

As such, the researcher recommends to produce trial sizes of Treatment B to allow consumers to experience the texture benefits firsthand. This can help overcome any skepticism and encourage trial and adoption of the product. However, it needs to follow ethical consideration to ensure that the formulation comes with clear usage instructions, including the frequency of application, recommended application time, and any precautions or warnings. Clear instructions can enhance user experience and maximize the benefits of the hair mask.

Likewise, the researcher may continuously gather feedback from consumers who use Treatment B to understand their satisfaction levels and areas for improvement and use this feedback to adjust the product or identify opportunities for new product development. However, it is imperative to keep sustainability in mind when selecting ingredients and packaging materials. As such sourcing materials locally, and choosing organic ingredients when possible will reduce environmental impact.

It is also recommended to consider another ingredient to enhance its effectiveness and at the same time presence to prolong shelf life and the quality of the hair mask. Evaluating the shelf stability of the hair mask formulation is possible by conducting stability tests under various storage conditions (e.g., temperature, light exposure). The researcher would also like to consider adding natural preservatives or antioxidants to prolong the shelf life of the product without compromising its natural integrity.

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