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Optimization of Organic Perfume from Kueni Fruit Peel Extract (*Mangifera odorata griff*) Study of Comparative Variation of Alcohol Content Stability

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ABSTRACT

Kueni fruit peel waste has the potential to be developed into natural perfume raw materials. This research aims to produce perfume by utilizing the essential oil of kueni fruit peel. Essential oil obtained from the extraction process is then formulated into perfume with the addition of other perfume raw materials such as fixatives, phytates and ethanol. The results of panelist evaluation show that the perfume produced has a distinctive aroma and the difference in concentration of Ethanol can affect the length of expansion of the perfume solution.

Keywords: Mangifera odorata griff., Organic waste, Natural perfume

1. INTRODUCTION

Perfume has been an integral part of human life for centuries, used for everything from enhancing body odor to as part of religious and cultural rituals. In ancient civilizations, perfume often served a spiritual and social purpose. For example, in Ancient Egypt, perfume was used not only in everyday life but also in religious rituals and funerals. The Egyptians were renowned for their perfumes, which were exported to many other civilizations, including the Greeks and Romans.[1] In Greek culture, perfume was used extensively in public festivals, religious rituals, and funerals. Perfume was seen as a symbol of the divine presence and was often used as an offering to the gods. The Romans later adopted many of these practices, using perfume in private and public rituals, as well as in everyday body care.[2]

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Kueni (Mangifera odorata griff) is a tropical fruit species whose skin is rich in aromatic compounds. Research shows that various types of fruit skin contain essential oils with unique aroma characteristics. These essential oils consist of various volatile organic compounds such as terpenes, esters, and aldehydes that give a distinctive aroma to each type of fruit. These compounds play an important role in providing a distinctive and attractive aroma to essential oils, which can be used in various applications, including in the manufacture of organic perfumes and other beauty products.[3] One of the natural ingredients that has the potential to be used in the manufacture of organic perfumes is Kueni (Mangifera odorata Griff) fruit skin. Research shows that the essential oil extracted from this fruit skin contains significant aromatic compounds, such as terpenes, esters, and aldehydes, which give unique aroma characteristics to each type of fruit. These compounds make Kueni fruit peel a potential source for natural perfumes that can provide a distinctive aroma and have strong antimicrobial properties, thus adding added value to its application in cosmetic and health products.[4] Kueni (Mangifera odorata Griff) is a mango variety known for its distinctive and strong aroma. The fruit peel is rich in aromatic compounds that have high potential for use in making organic perfumes. Compounds such as terpenes, esters, and aldehydes provide unique and attractive aroma characteristics, making Kueni an ideal choice for the development of natural and organic perfume products.[5] The fruit peel contains various volatile compounds that can be used as perfume bases.[6]

In perfume making, alcohol plays a very important role, not only as a solvent for essential oils, but also as a stabilizer. Alcohol allows the essential oil mixture to dissolve well and spread evenly throughout the perfume formula, resulting in a consistent scent. In addition, alcohol helps increase the volatility of the perfume, allowing the scent to spread more quickly after application. Some types of alcohol, such as special perfume alcohols, also have non-disruptive properties, providing a neutral base that enriches the perfume composition without significantly affecting the scent profile.[7] Alcohol plays an important role in perfume making, especially because of its ability to dissolve essential oils and other aroma compounds. In perfume formulations, alcohol helps in the distribution of aromas and facilitates application to the skin. Alcohol also acts as a stable solvent, maintaining the integrity of the perfume composition during storage. In addition, alcohol has antibacterial properties that can increase the durability and shelf life of perfumes.[8] However, different levels of alcohol in perfume formulations can affect the stability and performance of the scent. Changes in alcohol levels can affect the way the scent develops when the perfume is applied and its durability throughout the day. Therefore, research on variations in alcohol levels is essential to optimize the stability and effectiveness of perfumes, especially in organic perfume products such as those based on Kueni fruit peel extract. The stability of perfume is greatly influenced by various factors, including the composition of the base ingredients, alcohol content, and storage conditions. Research shows that changes in the alcohol content in a perfume mixture can affect the stability of the resulting aroma. In addition, storage factors such as temperature and light exposure also play an important role in maintaining the quality of perfume over a certain period of time. Changes that occur, such as a decrease in aroma intensity or a change in color, can occur if these factors are not carefully

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considered.[9] Consumers are increasingly aware of the differences between natural and synthetic fragrances, and generally prefer natural products because they are considered safer and more environmentally friendly.

Mango skin, including the Kueni variety, is known to contain significant antioxidant compounds. Research shows that mango skin extracts can contain phenolic compounds, flavonoids, and carotenoids that provide beneficial antioxidant potential, including in the stability of cosmetics and natural-based products. These compounds are able to ward off free radicals, which play an important role in slowing down the oxidation process and helping to maintain product quality in the long term.[10] The issue of demand for environmentally friendly raw materials in the perfume industry is getting more attention as consumer awareness of sustainability increases. Consumers now prefer products that use natural ingredients and environmentally friendly production processes, which also influences trends in perfume manufacturing. Many cosmetic and perfume companies are trying to reduce their carbon footprint and increase sustainability through the use of more natural raw materials and more efficient production processes in terms of energy and waste.[11]

2. EXPERIMENTAL

2.1. Chemicals, Equipment and Instrumentation

This study extracted essential oil from kueni fruit skin and formulated it into perfume using laboratory equipment with materials; Kuini Fruit Skin (Mangifera odorata) 240 g, Na_2SO_4 Anhydrate Powder 1 g, 40 ml Alcohol 96% and Alcohol 70%, Phitrate 5 ml and Ice 3 pieces.

2.2. Research Procedure

The initial stage of the process is to prepare all the necessary equipment. The kueni skin is then placed in a distillation device. After that, water is put into the distillation device and heated to boiling. The water vapor formed will carry the essential oil from the kueni skin to the condenser. In the condenser, the vapor will condense into liquid (distillate) which is then collected in a separate container. The distillation process continues until there is no more distillate dripping. To ensure the purity of the distillate, the distillate is then filtered using filter paper to separate the solid particles.

3. RESULTS AND DISCUSSION

3.1 Evaporation rate test on the scent of the perfume of the skin kueni (Mangifera odorata)

From the first test that is Evaporation rate test on the scent of the perfume of the skin kueni (*Mangifera odorata*) can know that the effect of perfume alcohol concentration of 96% has a shorter evaporation time compared to perfume 70%. This means that alcohol with a higher concentration is

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more volatile. This can be explained because alcohol has a higher vapor pressure, so alcohol molecules more easily escape from the surface of the liquid and turn into vapor.

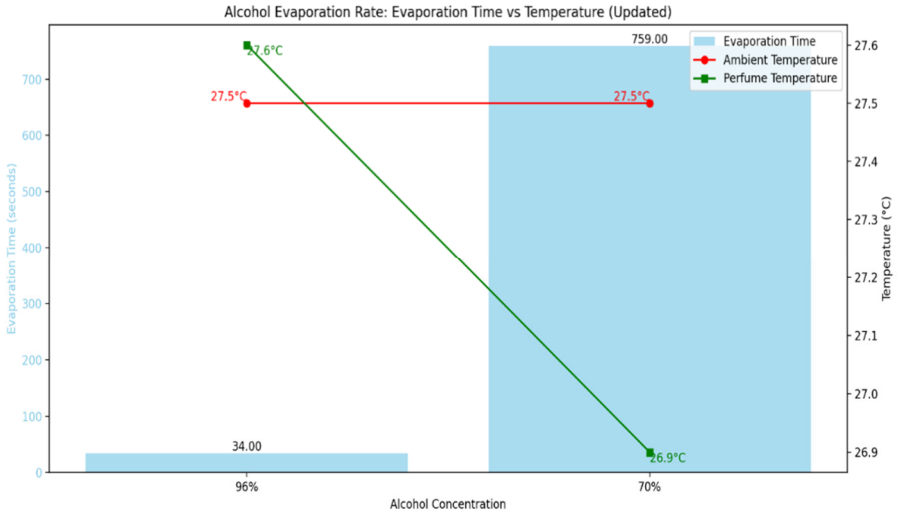

Figure 1. Alcohol *Evaporation rate test time vs Temperature*

The influence of temperature can be shown that the temperature of the perfume is kept constant at 27.5°C for both alcohol concentrations. This indicates that the experiment was carried out under controlled temperature conditions. In general, the higher the temperature, the faster the evaporation rate. However, in this graph, the temperature is kept constant so that the effect of temperature on the rate of evaporation is not visible.

In perfume evaporation, it was found that the longer evaporation in perfumes with an alcohol concentration of 70% indicates that the aroma of this perfume will last longer compared to perfume 96%. This is because the scent molecules in perfume are 70% more strongly bound by alcohol molecules, so it takes longer to unpack and diffuse into the air.

3.2 Ph test on the scent of the perfume of the skin kueni (Mangifera odorata)

From the second test that is Ph test on the scent of the perfume of the skin kueni (*Mangifera odorata*). Perfumes with an alcohol concentration of 96% have a higher pH (8.3) compared to perfumes that use 70% alcohol (7.42).

A pH value above 7 indicates alkaline properties. This means that both types of perfumes tend to be alkaline, although perfumes with 96% alcohol have slightly stronger alkaline properties.

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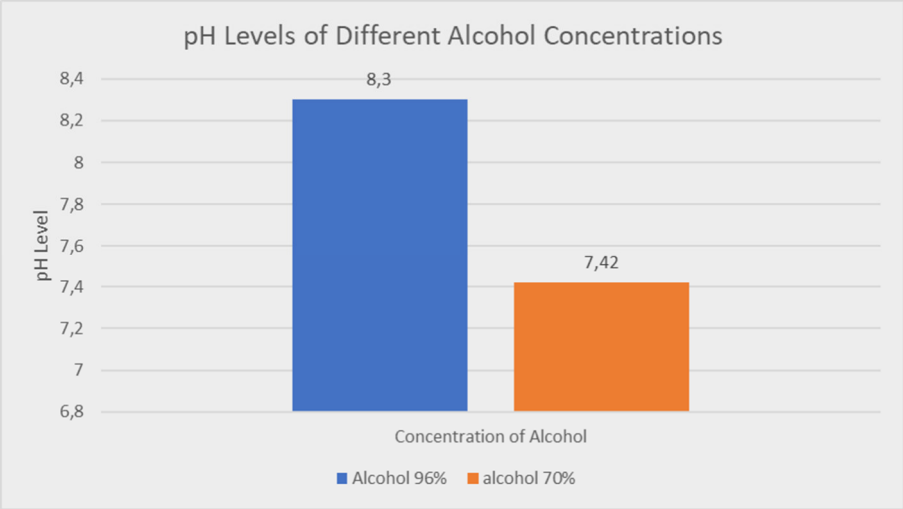

Figure 2. *Ph test of Different Alcohol Concentrations*

3.3 *Viscosity test on the scent of the perfume of the skin kueni (Mangifera odorata)*

From the third test that is Viscosity test on the scent of the perfume of the skin kueni (*Mangifera odorata*). The bar graph on the left shows the viscosity of the alcohol solution with concentrations of 96% and 70%. Viscosity is a measure of the viscosity of a liquid. The higher the viscosity value, the thicker the liquid. From the graph it can be seen that the 96% alcohol solution has a much higher viscosity compared to the 70% solution.

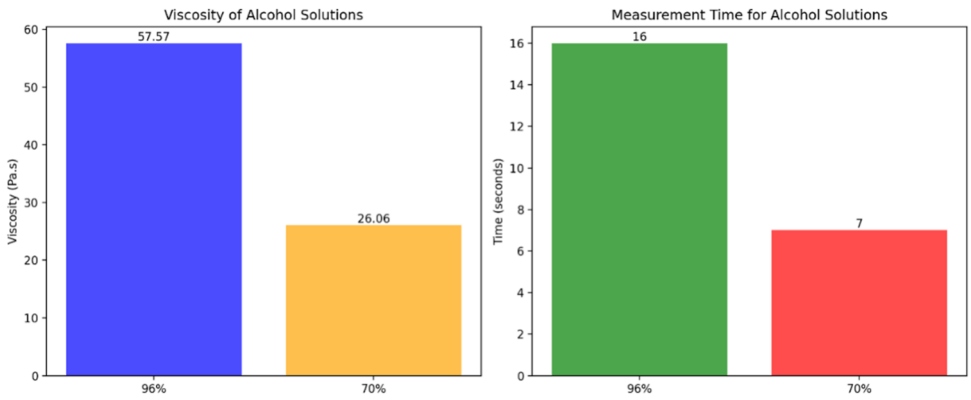

Figure 3. *Viscosity of Alcohol Solutions test and Meansurement Time for Alcohol*

4. CONCLUSION

Kueni (Mangifera odorata Griff). Kueni skin contains aromatic compounds The results of the analysis showed the presence of distinctive aromatic compounds in kueni skin, which have the potential to provide a distinctive aroma to perfume. Potential as a raw material for perfume Kueni skin extract

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can be used as a raw material for perfume, either as a single ingredient or as a mixture with other aromatic ingredients. Kueni fruit skin extract (Mangifera odorata Griff) has great potential as a raw material for perfume. Research shows that Kueni fruit skin contains volatile compounds that can be used in making perfume, either as a single ingredient or mixed with other aromatic ingredients. Several studies have also highlighted the benefits of this fruit skin which is rich in active compounds, including polyphenols and antioxidants, which can play a role in increasing the stability of perfume products.[12] Volatile substances are the main components of mango fruit aroma and are important in determining the quality of the fruit in addition to influencing consumer preferences.[13] Alcohol functions as a solvent for essential oils which are the main components of perfume. Alcohol functions as a solvent that allows the aroma of aromatic ingredients, such as essential oils, to spread efficiently when perfume is applied to the skin. In addition, alcohol also helps accelerate the evaporation of the fragrance and provides a better spreading effect. The right alcohol content in a perfume affects the strength and longevity of the scent. While alcohol has many benefits in making perfumes, changes in alcohol content can affect the stability and overall performance of the perfume.[14] Higher concentrations of alcohol (96%) are generally more effective at dissolving essential oils than 70% alcohol. This means that perfumes with 96% alcohol tend to have a higher concentration of essential oils, resulting in a stronger, longer-lasting scent. Perfumes with 96% alcohol content generally have a longer lasting scent than 70% perfumes. This is because higher concentrations of alcohol evaporate more slowly, allowing the scent to linger on the skin longer. 96% alcohol evaporates more quickly than 70% alcohol. This can cause a 96% alcohol perfume to feel fresher at first, but the scent also fades more quickly. Alcohol can cause skin irritation, especially for sensitive skin. Perfumes with 96% alcohol content have the potential to cause more skin irritation than perfumes with 70% alcohol content, especially for individuals with sensitive skin. This skin irritation can appear in the form of redness, dryness, or even contact dermatitis. More research is needed to analyze and identify the specific aromatic compounds in kueni skin. Some of the aromatic compounds commonly found in plants are terpenoids, esters, and phenolic compounds, all of which contribute to the distinctive aroma.[15]

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