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MAKING AROOM FRAGRANCE GEL USING CARAGENAN AND PECTIN WITH LEMON OIL (CITRUS LIMON) FRAGRANCE

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ABSTRACT
In the research on making air freshener gel using carrageenan and pectin as gel formerswith lemon oil as a natural fragrance and patchouli oil as a fixative. Natural fragrances have a mild fragrance and are good for health, while synthetic fragrances have a sharper fragrance which can cause dizziness. The purpose of this study was to determine the effect of different concentrations of vetiver oil and differences in carrageenan and pectin concentrations. The research method was to make a base air freshener gel with carrageenan and pectin concentrations (10:90;30:70; 50:50;70:30;90:10)%. Patchouli oil fixative concentration of 1 mL and lemon oil fragrance with a concentration of 2 mL;4 mL;6 mL;8 mL;10 mL . The results showed that the best gel formula was a mixture of carrageenan and pectin with a concentration of 70 : 30% with a syneresis level of 0.27%. The preferred soft and distinctive lemon oil fragrance is the one with a lemon oilcontent of 8 mL. The staying power of the highest fragrance gel lasts for 4 weeks with the addition of concentrated lemon oil 8 mL in the room temperature test room, air conditioner and fan. The highest total evaporation of liquid is 64.56% in the fan chamberL2 formula**.**

Keywords: Gel, fixative, carrageenan, pectin, lemon oil, patchouli oil.

INTRODUCTION

A clean room is a healthy room for carrying out activities and requires a comfortable and healthy atmosphere. If a room has an unpleasant odor and air circulation is not smooth, causing the air in the room to not change, an air freshener is needed to make the room smell good.

Air freshener is a product that can release volatile ingredients so that it can scent the room. Air fresheners are divided into two types, namely, synthetic fragrances and natural fragrances. Synthetic fragrances have a sharper fragrance, so they can cause dizziness, while natural fragrances have a softer fragrance so they are more comfortable to use.

Some air fresheners on the market use synthetic materials that contain dangerous chemicals that can harm health. Therefore, making natural air

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fresheners is a solution that is safe for people's health. Making natural air fresheners uses natural ingredients, such as lemon which is a natural fragrance.

Lemon contains acids that play a role in forming the fruit's sour taste. Lemons are a source of vitamin C and antioxidants which are beneficial for human health, and are often used as an ingredient to enhance the taste of dishes and eliminate fishy odors. Lemon contains the most dominant essential oil, the essential oil in lemon can be used as an air freshener and perfume. Lemon oil is obtained from the Citrus limon plant and the main chemical component of lemon oil is limonene. Lemon oil is useful as an anti-stress agent, because lemon is able to calm, so it can help eliminate mental fatigue, dizziness, anxiety, nervousness and nervous tension and also lemon has the ability to refresh the mind.

Air fresheners contain fixatives which are compounds that have a higher vapor point than the vapor point of the fragrance and can reduce the evaporation speed of the fragrance. One of the fixatives that can be used to prepare air freshener gel is patchouli oil.

Patchouli oil is one of the essential oils commonly used in perfume products. Apart from having a distinctive fragrance, patchouli oil can also be used as a binder (fixative). that the fixative properties of patchouli are due to the main component, namely patchouli alcohol which is classified as a terpene oxygenerate so that it can bind and slow down the vapor power of the fragrance.

There are several types of air fresheners on the market, including solid, liquid and gel. Air fresheners in gel dosage form are more practical and easier to use than air fresheners in liquid form because they have to be sprayed into the room first. Apart from that, this air freshener in gel dosage form is easier to store and package and can reduce the speed of release of volatile substances in the air freshener so that the fragrance lasts longer.

Gel can be made using natural basic ingredients, such as carrageenan and pectin. Carrageenan is one of the ingredients most commonly used to make gel. Carrageenan is fragile when made into gel. To increase its elasticity and strength, it can be mixed with other types of starch or gum.

Pectin is a hydrocolloid material which is included in the carbohydrate group apart from starch, alginate, gum arabic, and other carbohydrate modifications, so pectin can be used as an ingredient for making air freshener gel.

METHOD

Tools and Materials

The tools used in this research were standard laboratory glassware, beaker glass (Pyrex), analytical balance, stir bar, measuring cup (Pyrex), watch glass, parchment paper, gel mold, water bath, dropper pipette, tweezers. tube, spatula,

thermometer, oven and gel container. The ingredients used in this research were carrageenan (gel forming), pectin (gel forming), lemon oil (fragrance), patchouli oil (fixative), propylene glycol (cosolvent), sodium benzoate (preservative), dye and distilled water.

Making Air Freshener Gel

The tools and materials to be used are prepared and the necessary ingredients are weighed. The first stage aims to get the best base shape. In this research, we wanted to vary the concentration of carrageenan and pectin with a percentage ratio of 10:90; 30:70; 50:50; 70:30; 90:10. It is hoped that mixing the two ingredients will produce a gel with a supple, elastic texture - springy and not easily crushed. The second stage aims to determine the best fragrance results obtained from the panelists' assessments. The process of making an air freshener gel base with lemon oil as a fragrance. Aquadest heated to 75□C. Carrageenan and pectin are put into a beaker then stirred until dissolved. After that, add the sodium benzoate into the beaker little by little and stir until homogeneous. The beaker containing the mixture of carrageenan, pectin and sodium benzoate was removed from the water bath, so that the temperature dropped to 65□C while continuing to stir. Once the temperature reaches 65□C, added propylene glycol, stirred until homogeneous. Once homogeneous, add 1 mL of patchouli oil and lemon oil by varying 5 concentrations with concentrations of 2%, 4%, 6%, 8% and 10%. Then stir until homogeneous and pour into the mold. Of the five formulas, the gel formula was selected which produced an aroma that was acceptable to the panelists.

RESULTS AND DISCUSSION

Gel Stability Test

The gel stability test was carried out to determine the stability of the gel in retaining the water trapped inside. The lower the level of syneresis, the more stable the gel. It can be concluded that the best gel is carrageenan and pectin in a ratio of 70:30, where the percentage of syneresis produced is 0.27%, that the higher the carrageenan content, the lower the syneresis value produced.

Fragrance Persistence Test

The durability of the fragrance of an air freshener gel product can be determined by how much fragrance the product loses. The results of the fragrance resistance

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test at room temperature, AC and fan obtained are rounded off of the fragrance resistance test scores, where 1 (don't like it), 2 (don't like it), 3 (like it), 4 (like it very much) and 5 (very much). - really like). It can be seen that air freshener gel placed in room temperature rooms and AC rooms has a longer lasting fragrance compared to air freshener gel placed in fan rooms.

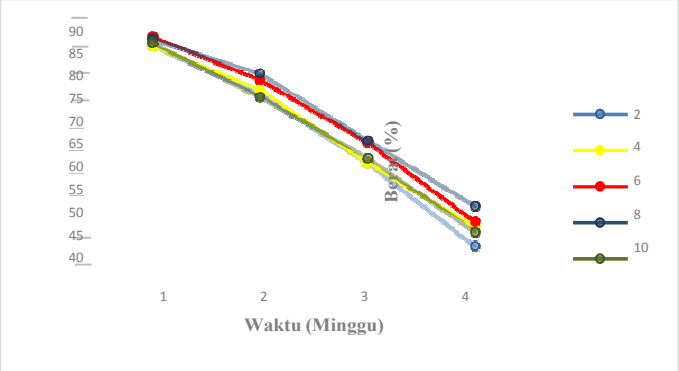
Air freshener gel placed in a room with room temperature and AC can last for 4 weeks, while air freshener gel placed in a fan room only lasts for 3 weeks. This is due to differences in the environmental conditions of the test site, namely room temperature, indoor air circulation and room size.

Liquid Evaporation Test

The total evaporation of liquids was determined by weighing the weight of the air freshener gel and calculating the weight loss over four weeks after being placed in different test rooms, namely room temperature, fan and AC.

Figure 1. Graph of the percentage of remaining gel weight at room temperature.

From Figure 1 it can be seen that the low percentage of remaining gel weight is found in the 2 mL lemon oil sample, namely 46.50% and the highest percentage is found



in the 8 mL lemon oil sample, namely 54.23%. From the liquid evaporation test at room temperature, it can be concluded that the best formula is using lemon oil with a concentration of 8 mL.

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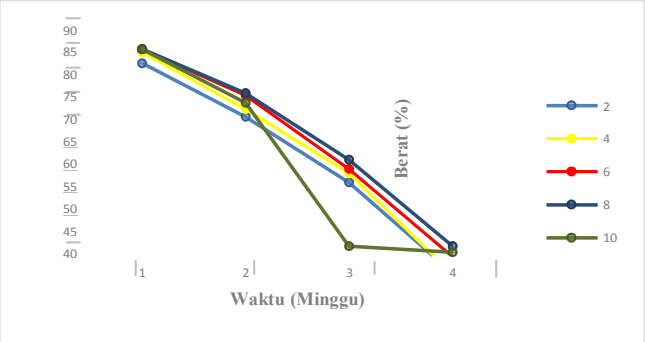
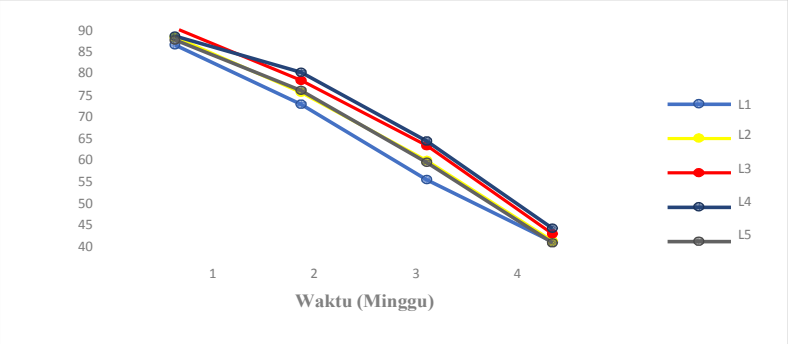
Figure 2 Graph of the percentage of remaining gel weight in the fan room.



From Figure 2, it can be seen that the low percentage of residual gel weight



found in the 4 mL lemon oil sample, namely 35.43% and the highest percentage is found in the 8 mL lemon oil sample, namely 41.64%. From the liquid evaporation test in the fan room, it can be concluded that the best formula is using lemon oil with a concentration of 8 mL.

Figure 3. Graph of the percentage of remaining gel weight in the AC room.

From Figure 3 it can be seen that the low percentage of remaining gel weight is found in the 2 mL lemon oil sample, namely 42.50% and the highest percentage is found in the 8 mL lemon oil sample, namely 45.50%. From the liquid evaporation test in the AC room, it can be concluded that the best formula is using lemon oil with a concentration of 8 mL.

Shows that the largest total evaporation of liquids was shown by preparations stored in the fan room. This is because the gel experiences syneresis. Stirring techniques can also influence weight loss, because the more homogeneous a solution is, the better the gel stability will be and evaporation can be inhibited. Apart from that, it is also caused by storage temperature which causes water to

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evaporate more quickly, indoor air circulation and room size. Air circulation and room size influence differences in oil and water concentration gradients in the gel. A room with high and open air circulation and a wider size creates a larger oil concentration gradient so that the oil evaporates more quickly.

Material Texture Characteristics Test

Texture analyzer analysis aims to determine the characteristics of air freshener gel made from carrageenan and pectin. The results obtained were the final load value of the air freshener gel was 6.5 g/mm2 and the final load value of Stella Lemon was 40.5 g/mm2. This shows that the highest value is Stella Lemon, which means that the air freshener gel made from a mixture of carrageenan and pectin cannot meet the standards of commercial air fresheners. This can occur due to differences in the materials used. The ingredients used by Stella Lemon and air freshener gel are different, Stella Lemon is not produced with a mixture of carrageenan and pectin, where the mixture of these two ingredients makes the gel supple and elastic. Stella lemon actually has a dense texture and is not chewy, unlike air freshener gel which is made from carrageenan and pectin so that it forms a chewy and elastic gel.

Functional Group Test with FTIR

FT – IR analysis was carried out to identify the functional groups contained in the air freshener gel and coffee stella samples as a comparison using a Shimadzu IR Prestige – 21 Fourier Transform Infrared (FT – IR) Spectophotometer (Serial No. A210048 02519). FT–IR is a widely used method to investigate intermolecular interactions and phase behavior between raw materials and supports.

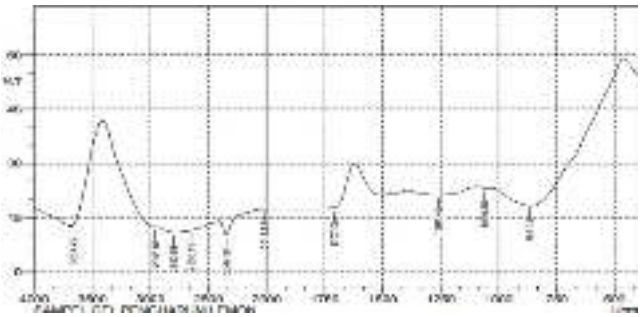

Figure 4 FTIR spectrum of air freshener gel products.

Figure 4 shows the results of air freshener gel samples characterized using FT-IR in the range 500 – 4000 cm-1. The absorption pattern for the wavelength number 1261.45 contains the COOH functional group. At a wavelength of 1707.00 there is the aromatic functional group CH2CH3. At wavelengths 2347.37 and 2650.19

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there is the alkene functional group CH2. At wavelengths 2800.64 and 2956.87 there is the CH2 functional group. At the wavelength 3664.75 there is an OH functional group.

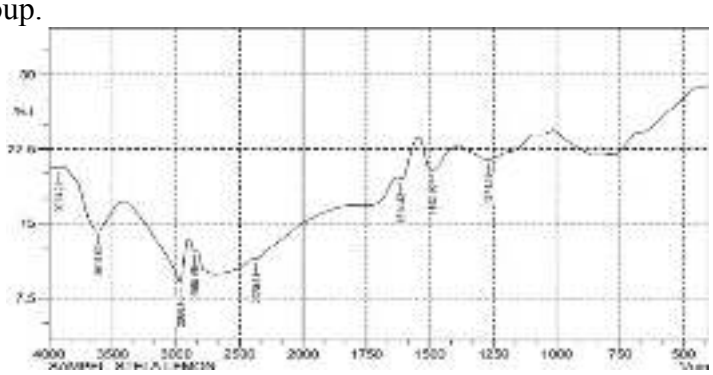

Figure 5 FTIR spectrum of Stella lemon products

Figure 5 shows the results of the stella sample as a comparison which was characterized using FT –IR in the range 500– 4000 cm-1. The absorption pattern for the wavelength number 1271.09 contains the COOH functional group. At wavelengths 1492.90 and 1614.42 there is the aromatic functional group CH2CH3. At the wavelength 2370.51 there is the alkene functional group CH2. At wavelengths 2854.65 and 2966.45 there is the CH2 functional group. At wavelengths 3614.60 and 3923.21 there is an OH functional group. From the results of the comparison between the air freshener gel and Stella Lemon, it can be seen that the air freshener gel has the same functional groups as Stella Lemon and the wavelength of the air freshener gel is almost close to that of Stella Lemon.

CONCLUSION

The basic ingredient for air freshener gel, a combination of carrageenan and pectin, can be formulated as the best gel base with a ratio of 70: 30. The best concentration of lemon oil as a fragrance in the characteristics of an air freshener gel that uses a combination of carrageenan and pectin as a gel base is the L4 formula, which is a formula with oil concentration. lemon 8 mL. Evaporation of the liquid in the air freshener gel from the best lemon oil (Citrus Limon) which was placed in various rooms, the results showed that in the rooms that used fans experienced high gel weight loss with a low percentage of residual gel weight and

experienced a total evaporation of the liquid. largest than any other test chamber4.1.2 Suggestions

Cocopeat fermentation application, make changes that include increasing the Potassium (K2) value $_{based}$ on the specified SNI, therefore in the future you need to increase the amount of cow dung soil material.

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