

**MAKING AROMA THERAPI CANDLES WITH  
ADDITION OF ROSEMARY OIL (*Salvia rosmarinus*)**

**Muhammad Husein Afifuddin Ridwan<sup>1</sup>, Helmi Haris<sup>2</sup>**

<sup>1</sup>Halal Food Science Student , Djuanda University, Indonesia

<sup>2</sup>Faculty of Halal Food Science, Djuanda University, Indonesia

Corresponding Author: [Generasimamprang@gmail.com](mailto:Generasimamprang@gmail.com) : [helmiharris79@yahoo.com](mailto:helmiharris79@yahoo.com)

**Abstract**

Aromatherapy is a therapy that uses aroma compounds to treat, reduce, or prevent disease, infection, and anxiety by inhaling them. Rosemary (*Salvia rosmarinus*) has essential oils that function as aromatherapy. This research was conducted with the intention of utilizing rosemary flower waste which usually becomes household waste and pollutes the surrounding environment to be used as a room deodorizer that has many health benefits due to the chemical content contained in the rosemary flower. This research aims to study the technique of making candles with the addition of rosemary to study the content of rosemary in making aromatherapy candles and to study the physicochemical characteristics of rosemary in making aromatherapy candles. The research method used in this study involved experimental procedures to make aromatherapy candle preparations from stearic acid and paraffin wax formulations. With the formulation of stearic acid and paraffin wax in the ratio of 60%:40% (F4) and the addition of essential oil combinations in the ratio of 1%:5% (A1), 2%:4% (A2), 3%:3% (A3), 4%:2% (A4), 5%:1% (A5). The best aromatherapy candle formulation produced with a ratio of stearic acid and paraffin wax 60%: 40%, the concentration of citronella essential oil and essential oil combination of 4%: 2% (A4) and 5%: 1% (A5) to produce a relaxing, comfortable and fresh therapeutic effect.

Keywords: aromatherapy candle, rosemary oil

**1. INTRODUCTION**

Indonesia is a country rich in a variety of herbal plants. Based on several journals, it is known that Rosemary has the main content of fiber, protein, minerals, vitamins, and phenolic compounds which have antioxidant, antibacterial, and antiviral properties (2). According to the history of essential oils produced as the basic ingredients of perfume in the 13th century and the development of technology and innovation, essential oils continue to develop until their use as basic ingredients for food, cosmetics and also medicines (3). Essential oils can be obtained from plants and plants that are in our environment. Essential oil is one of the vegetable oils that has many benefits. The raw material for this oil is obtained from various parts of the plant such as leaves, flowers, seeds, fruits, skin seeds, stems, roots or rhizomes. One of the main characteristics of essential oils is that they are volatile and have a distinctive aroma (4). Essential oils are natural oils made from plants that stimulate the immune system. The various effects of essential oils are as anti-microbial, antiviral, antifungal, immunostimulant, anti-inflammatory, antitoxin, balancing agent, insect killer and repellent, expectorant and antitussive (5). Essential oils are used to maintain and promote health and well-being, often combining a soothing, healing touch with the therapeutic properties of essential oils. Aromatherapy can also be defined as the controlled use of plant essentials for therapeutic purposes (6). Essential oils can be taken by distillation or often known as distillation, this distillation process aims to get orange and lemongrass distillate or water vapor that has been cooled through a condenser. The quality of essential oils is determined by the

natural characteristics of each oil and the foreign materials mixed in (7). The optimal temperature for storing essential oils ranges from -20 to 40C, at temperatures greater than that it is known that essential oils easily deteriorate after storage for 3 months (8). Aromatherapy is the treatment with essential oils or pure oil essence to help improve or maintain health, raise spirits, refresh and calm (9). Aromatherapy candles are another application of existing candles. Aromatherapy candles in their manufacture use several ingredients and one of them uses essential oils that have aromatherapy fragrances. Aromatherapy itself has calming properties and also has a refreshing aroma (10). Aromatherapy candles are candles that contain essential oils so that they create an aroma that can make the mind refresh, relax and can cure headaches (11). Aromatherapy candles provide therapeutic effects and are calming (12). Candles are usually just a replacement for lamps and are not attractive. However, scented candles are made from several different ingredients and one of them uses essential oils (13).

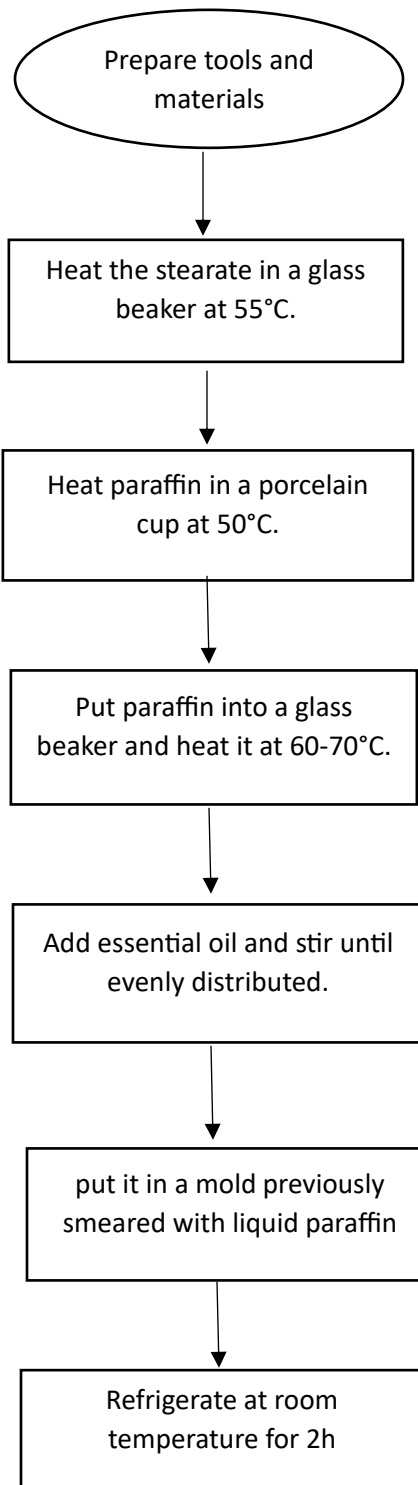
## METHODOLOGI

The research method used in this study involved experimental procedures to make aromatherapy candle preparations from stearic acid and paraffin wax formulations. Tests were carried out using various tools and materials. The research was carried out experimentally by making aromatherapy candle preparations from stearic acid and paraffin wax formulations at a ratio of 60%:40% (F4) and adding essential oil combinations at a ratio of 1%:5% (A1), 2%:4% (A2), 3%:3% (A3), 4%:2% (A4), 5%:1% (A5). Weighed the required amount of paraffin wax and stearic acid. Paraffin wax and stearic acid were put into porcelain cups according to the predetermined concentration, then melted completely on a hot plate in the temperature range of 65-84°C. After that, it is stirred and homogenized using a stirring rod, waited until the temperature drops to the range of 55°C, which is the temperature at which Stearic Acid begins to solidify again, then dripped with a combination of oils with a predetermined concentration, stirred and homogenized using a stirring rod. Then put into a mold that has been paired with a candle wick in the middle and wait until the wax solidifies into a candle.

The test procedure includes the following

1. Organoleptic Test: This test involves visual observation of the wax by 10 panelists and the results are recorded on a predetermined scale.
2. Melting Point Test: The melting point of the wax was determined using the drop pipette method and compared with the standard range specified in SNI 06-0386-1989.
3. Burning Time Test: The burning time is obtained by calculating the difference between the initial and final time of burning the candle wick. The test results are presented on a predetermined scale and are based on the subjective opinions of the panelists. Evaluation of the therapeutic effect was also conducted using a scale of 1-10, and the results were based on the individual opinions of the panelists. Preference for the scent of the candle before and during burning was assessed on a scale of 1-5, and the percentage of preference for each type of candle was recorded.

### Making aromatherapy candle images 1



## RESULTS AND DISCUSSION

### 1. Optimization of aromatherapy candle base

The best base result is F4 where there is 40% paraffin wax and 60% stearic acid. In organoleptical observations, all formulations have the same color, which is evenly white and there is no cracking in the aromatherapy candle base preparation according to the existing standards, namely SNI 0386-1989-A/SII 0348-1980 regarding the melting point of candles ranging from 50 to 58°C.

Candles with stearic acid ingredients have a longer burning time, this is influenced by the nature of stearic acid which is solid and crystalline at room temperature (13). The difference in candle burn time is influenced by the addition of essential oil, the higher the essential oil content, the faster the candle burns (14).

Table 1 Aromatherapy Candle Base Optimization

No	Formulation	Organoleptic	Melting point	Burn time
1	F1	Evenly white, no cracks, and slight hollows	57 °C	3 hours 31 minutes
2	F2	Evenly white, no cracks, and slight hollows	57 °C	3 hours 34 minutes
3	F3	Evenly white, no cracks, and slight hollows	54 °C	4 hours 15 minutes
4	F4	Evenly white, no cracks, and slight hollows	54 °C	4 hours 12 minutes
5	F5	Evenly white, no cracks, and deep hollows	52 °C	4 hours 1 minutes

Source: (Risliati & Rijai, 2021)

Description;

F1: Stearic Acid 30%; Paraffin Wax 70%

F2: Stearic Acid 40%; Paraffin Wax 60%

F3: Stearic Acid 50%; Paraffin Wax 50%

F4: Stearic Acid 60%; Paraffin Wax 40%

F5: Stearic Acid 70%; Paraffin Wax 30%

Table 2 Formulation of Aromatherapy Candle Combination of Essential Oils

No	Formulasi	Organoleptic	Melting point	Burn time
1	F1	Evenly white, no cracks, and slight hollows	53 °C	4 hours 42 minutes
2	F2	Evenly white, no cracks, and slight hollows	53 °C	5 hours 49 minutes
3	F3	Evenly white, no cracks, and slight hollows	54 °C	5 hours 20 M minutes
4	F4	Evenly white, no cracks, and slight hollows	52 °C	5 hours 5 minutes
5	F5	Evenly white, no cracks, and deep hollows	51 °C	5 hours 20 minutes

Source : (Risliati & Rijai, 2021)

#### Description;

1. A1: Stearic Acid 54%; Paraffin Wax 40%; Lemongrass Essential Oil Wangi 1%; Lemon Essential Oil 5%.
2. A2: Stearic Acid 54%; Paraffin Wax 40%; Lemongrass Essential Oil Wangi 2%; Lemon Orange Essential Oil 4%
3. A3: Stearic Acid 54%; Paraffin Wax 40%; Lemongrass Essential Oil Wangi 3%; Lemon Orange Essential Oil 3%
4. A4: Stearic Acid 54%; Paraffin Wax 40%; Lemongrass Essential Oil Wangi 4%; Lemon Orange Essential Oil 2%
5. A5: Stearic Acid 54%; Paraffin Wax 40%; Lemongrass Essential Oil Essential Oil 5%; Lemon Orange Essential Oil 1%

#### 2. Overall Candle Appearance Test

This test was conducted according to SNI 0386-1989-A/II 0348-1980. The wax concentration has a favorability value, namely on scale 2 (Less Like) with a percentage of favorability of 10% in A2, A4, and A5. On scale 3 (Ordinary) with a percentage of favorability of 30% in A2; 40% in A1 and A3; and 50% in A4 and A5. On scale 4 (Like) with a percentage of 40% in A4 and A5; 50% in A2 and A3; 60% in A1. On a scale of 5 (Very Like) with a percentage of favorability of 10%, namely A2 and A3.

#### 3. Pre-burn Candle Scent Test

Essential oils in aromatherapy candles are the main source of aroma that will be absorbed into the wax and give it its distinctive aroma when inhaled, due to volatile essential oils (15). This test was conducted with the tested aspect in the form of panelists' level of preference for the aroma of candles before burning. The wax concentration has a favorability value that is on a scale of 1 (Dislike) with a percentage of favorability of 10% in A4. On scale 2 (Dislike) with a percentage of favorability of 10% on A4 and A5. On scale 3 (Ordinary) with a percentage of favorability of 40% in A1; 60% in A3; and 70% in A1. On scale 4 (Like) with a percentage of 30% in A2 and A3; 40% in A1; 70% in A4; and 80% in A5. On a scale of 5 (Very Like) with a percentage of favorability of 10%, namely A3, A4 and A5 (16)

#### 4. Favorability Test for Candle Scent when Burning

. The burn time test is the difference between the first burn time and the time when the candle burns out (17). The longer the burn time indicates the longer the candle burns out, the longer the burn time required, the better the quality of the candle (18). Aromatherapy candles are made according to the standard formula for making aromatherapy candles. In making aromatherapy candles, essential oils are usually added (19). The wax concentration has a favorability value, namely on scale 1 (Dislike) with a percentage of 10% favorability in A1 and A2. On scale 2 (Dislike) with a percentage of favorability of 10% in A2, A4, and A5. On scale 3 (Ordinary) with a percentage of favorability of 30% in A5; 60% in A1, A2, and A4; and 70% in A3. On scale 4 (Like) with a percentage of 10% in A3; 20% in A4; 30% in A1 and A2; 40% in A5; and 80% in A5. On scale 5 (Very Like) with a percentage of favorability of 10%, namely A3 and A4 and 20%, namely A5.

#### 5. First Time Scent Detection Test

The results of the first time scent detection provide different time intervals for each candle heated to dissolve. The best time interval is 0-61 seconds with a percentage of 40% in candles (A4) and 30% in candles (A3) and (A5), 61-120 seconds with the largest percentage of 50% in candles (A1), in candles (A2) with a percentage of 40% and 30% in candles (A3) and (A5). In candle (A3) with a percentage of 30% with an interval of 181-240 seconds. Percentage of time lapse of first time scent detection.

#### 6. Test of perceived therapeutic effect

The results of the assessment of the therapeutic effects felt by the panelists based on the opinions of each panelist, the results obtained show that candles (A4) and (A5), produce the best therapeutic effects, namely relaxation, comfort and freshness.

## CONCLUSION

The best candle base is a candle with a ratio of stearic acid and paraffin wax 60%: 40% (F4), the longest burning time with the best melting point is shown by formula (F4). The second stage obtained melting point results in accordance with SNI, the longest burning time obtained by formula (A4), the appearance that panelists liked (A1); (A2); (A3), the aroma of the candle that was liked before burning (A4) and (A5), the aroma of the candle that was liked when burned (A1); (A2); (A5), the fastest first time aroma detection (A1) and (A2), and the therapeutic effect felt in the form of fresh and comfortable most in formulas (A4) and (A5). The best aromatherapy candle formulations were produced with a ratio of 60%:40% stearic acid and paraffin wax, a combination concentration of citronella essential oil and lemon essential oil of 4%:2% (A4) and 5%:1% (A5) to produce relaxing, comfortable and fresh therapeutic effects.

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