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The Development of Therapeutic Aroma Massage Oil Formulations from a Combination of Ginger Oil (Zingiber officinale var Rubrum) and Lemongrass (Cymbopogon citratus (DC) Stapf)

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Abstract

Backgrounds; The essential oils of ginger (Zingiber officinale var Rubrum) and lemongrass (Cymbopogon citratus (DC) Stapf) are two natural ingredients that are often used in various aromatherapy and traditional medicine applications. Ginger is a plant known for its distinctively flavorful root and is used in various cuisines and traditional medicine.**; Objectives**; The aim of this research is to produce essential oil from ginger rhizome (Zingiber officinale var Rubrum) and lemongrass essential oil (Cymbopogon citratus (DC) Stapf) then formulated into aroma therapy massage oil preparation.. **Methods**; This type of research is quasi-experimental where this research does not meet all the criteria of pure experimental research which only involves groups that use groups of variations in formulation concentrations. While the method used to obtain essential oils uses the distillation method. a method commonly used to extract essential oils from aromatic plant materials. Steam distillation is one method that is often used in the extraction of essential oils. **Results;** According to the results of formulations F1, F2, F3, F4, and F5, having a pH of 6 and F5 having a pH of 7, homogeneous, the test meets the requirements of SNI characteristics.**Conclusions**; The research that has been done, it can be concluded that the essential oil produced from the combination of Ginger Oil (Zingiber officinale var Rubrum) and Lemongrass (Cymbopogon citratus (DC) Stapf) from the distillation process can be processed into a preparation of Massage Oil Aroma Therapy.

Keywords*:* Massage Oil; aromatherapy; red ginger; lemongrass

BACKGROUND

The essential oils of ginger (Zingiber officinale var Rubrum) and lemongrass (Cymbopogon citratus (DC) Stapf) are two natural ingredients that are often used in various aromatherapy and traditional medicine applications. Ginger is a plant known for its distinctively flavorful root and is used in various cuisines and traditional medicine.

lemongrass (Cymbopogon citratus (DC) Stapf), Lemongrass, also known as lemon grass, is a plant with long, citrus-scented leaves. Lemongrass essential oil is extracted from its leaves which have a refreshing, citrusy and herbal aroma. Lemongrass is known for its relaxing properties and is used in aromatherapy to reduce stress, improve concentration, as well as relieve muscle tension. In addition, lemongrass also has antibacterial and antifungal properties.

The combination of ginger and lemongrass oil in aroma therapy massage oil preparations can produce a soothing and refreshing aroma while providing health benefits. The essential oils of these two ingredients can have a synergistic effect on the body and mind when used properly.

Massage oil is a type of oil specifically designed to be used for massage or body treatments. Massage oils usually have properties that make them suitable for use on the skin, such as the ability to glide easily and penetrate the skin without leaving a sticky feeling. Furthermore, some massage oils also contain additional ingredients such as aromatics or essential oils, which can provide additional benefits in the form of relaxation, skin rejuvenation, or aromatherapy effects. Massage oils can be used in various types of massage, including relaxation massage, reflexology therapy, deep tissue massage.

The aim of this research is to produce essential oil from ginger rhizome (Zingiber officinale var Rubrum) and lemongrass essential oil (Cymbopogon citratus (DC) Stapf) then formulated into aroma therapy massage oil preparation.

METHODS

The research procedure

Preparation of simplisia

The rhizome samples of ginger (Zingiber officinale var Rubrum) Lemongrass (Cymbopogon citratus (DC) Stapf) were harvested during the dry season when the plants were still growing actively, and the leaves were still green. This indicates that the ginger plant is still healthy and actively producing the desired substances in the rhizome. This can help prevent spoilage and facilitate the drying process after harvest. For sampling, carefully dig up the ginger rhizome using a tool such as a hoe or hand spade. Make sure to dig gently so as not to damage the rhizome. Carefully remove the soil from the rhizome. You can use your hands or a soft brush to remove any soil still attached to the rhizome. Weigh 1000g of rhizomes and cut the ginger rhizomes from the plant using a sharp knife. Once the rhizomes are cut, then clean them by washing the rhizomes in clean water and scrubbing them gently with a soft brush. The washed ginger rhizomes are then dried well in a shady place such as at room temperature, protected from direct sunlight, and has good air circulation. This drying process can take several days until the rhizomes are completely dry. Once the ginger rhizomes are dried, they are stored in an airtight container in a cool, dark place. Thoroughly dried ginger rhizomes have a longer shelf life and can be used in a variety of applications, including culinary and traditional medicine.

The preparation of essential oil

The manufacture of ginger essential oil (Zingiber officinale var Rubrum) and lemongrass essential oil (Cymbopogon citratus (DC) Stapf) using the distillation method by means of

samples that have been dried or in the form of simplisia cut into smaller pieces to facilitate inclusion in the flask.

distillation, then heat the water in the distillation device until it becomes water vapor, the water vapor will flow upwards through the plant material, evaporating the essential oil from the sample, the distillation process will separate the essential oil from the sample. The water vapor carries the essential oils with it as it rises through the sample. The essential oils then evaporate along with the water vapor, the mixed vapors of water and essential oils then pass through the condenser, where they are cooled and return to liquid form. Essential oils and water separate during this process. Essential oils are lighter than water and will float on water. The condensed essential oils are then collected in an oil collector.

The collected essential oil can be filtered to remove any particles that may be trapped in it. The essential oil that has been produced is kept in a suitable bottle and stored in a cool, dark place, and protected from sunlight. After obtaining the essential oil, the distillate yield is then calculated.

Classification of inclusion and exclusion criteria

Determination of inclusion and exclusion criteria is a characteristic of ensuring that the sample used in the study reflects the population or group to be studied.

Inclusion criteria:

1. Male or female aged 20 - 45 years
2. Willing to follow research instructions
3. Respondents who always use massage oil

Exclusion criteria

1. Men or women under 17 years old and over 40 years old.
2. Respondents who are not willing to follow research instructions
3. Respondents who have never used massage oil

The pre-formulation design

Table 1. Preformulation design of massage oil preparation

Ingredient name	Formula (%)					Sumber
	F1	F2	F3	F4	F5	
Ginger essential oil	4	3	2	5	0	1-3% (Ramadhani, 2020)
Lemongrass essential oil	1	2	3	0	5	1-4% (Yulianto,dkk, 2018)
Menthol	5	5	5	5	5	0,05-10.0% (Rowe, *et al.*, 2009)
Camphor	2	2	2	2	2	1-11% (FI V, 2014)
BHT	0,02	0,02	0,02	0,02	0,02	0,02-0,5% (Rowe, *et al.*, 2009)
VCO	Ad 10	Ad 10	Ad 10	Ad 10	Ad 10	Ad 100% (Rowe, *et al.*, 2009)

The evaluation test of the preparation

Organoleptic Test

Tests are carried out to evaluate physical properties including texture, color, aroma of the preparation.

pH test

The pH test is one of the important tests in evaluating aroma therapy massage oil preparations. To ensure that the pH of the preparation is in accordance with the pH range of the skin that is comfortable to use or apply. How to test pH is to prepare a container to hold the

aroma therapy massage oil preparation to be tested. Take a sample of massage oil aroma therapy preparation that is sufficient to be tested. Be sure to mix the sample evenly if there is phase separation. Dip litmus paper into the preparation sample and leave it for a while until the reading stabilizes. pH results with the predetermined skin pH range (4.5 - 7.0)

Homogeneity Test

Homogeneity testing ensures that the mixture of essential oils and other ingredients has been mixed well and evenly by means of samples that have been mixed evenly.

RESULTS AND DISCUSSION

Figure 1. Essential oil yield

Table 2. Essential oil organoleptic test

Indicator	F1	F2	F3	F4	F5
Texture	Liquid	Liquid	Liquid	Liquid	Liquid
Colour	Dark red	Dark red	Dark red	Dark red	Dark red
Odor	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic
Taste	Spicy	Slightly spicy	Slightly spicy	Slightly spicy	spicy

The purpose of organoleptical testing helps in assessing the overall quality of the preparation to ensure that the preparation meets the quality standards of the preparation. It can be seen in the table above that formulations F1, F2, F3, F4, and F5 have the same texture and odor, namely liquid and aromatic odor, but there are differences between color and taste. Formulations F1, F2, F3 and F5 have a dark red color and F4 has a yellow color while the taste in F1 and F5 is spicy, F2, F3 and F4 are mildly spicy, based on the above results, the test meets the requirements of SNI characteristics.

Table 3. pH test of preparations

Formulation	pH	References
F1	6	
F2	6	4,5 – 7,0
F3	6	(H. Lambers *et all,* 2006)
F4	6	
F5	7	

pH testing on massage oil preparations is a parameter with the aim of measuring and controlling pH to maintain the stability of preparations and preparations that will be used on the

body's skin so as not to cause irritation or unwanted effects. The results based on the table above in formulas F1, F2, F3 and F4 have a pH of 6 and F5 has a pH of 7, this is in accordance with the skin pH library range of 4.5 - 7.0.

Table 4: Homogeneity test of the preparation

Formula	Homogenitas	Pustaka
F1	Homogen	Homogen (H. Lambers *et all,* 2006)
F2	Homogen	
F3	Homogen	
F4	Homogen	
F5	Homogen	

Homogeneity in a preparation refers to the uniformity or even distribution of all ingredients contained in the preparation, including active substances and other additives. The purpose of the test is to optimize the therapeutic effect, prevent dose variability, determine the quality of the preparation, and facilitate sensory consistency in the preparation.

The mechanism of action of zingiberene and gingerol as aromatherapy components in ginger oil involves olfactory stimulation of the olfactory nerve. When zingiberene and gingerol are inhaled as aroma, these compounds interact with olfactory nerve receptors in the nose. These send signals to the brain, which then interprets the aroma as a specific sensation. Zingiberene also has physiological effects on the skin and body. When ginger oil containing zingiberene is applied to the skin through massage oil or massage, zingiberene gives the skin a warm sensation. This is due to its vasodilator properties, which means the compound can dilate blood vessels in the skin, increasing blood flow to the treated area. This can help relieve muscle tension, improve blood circulation, and reduce pain and for its analgesic (pain-relieving) properties, which means it can help reduce pain in the skin and muscles. This makes it a useful ingredient in massage therapy to relieve physical discomfort. While gingerol is a chemical compound found in ginger oil and gives ginger its spicy flavor, this compound works to affect olfactories when the aroma of ginger oil containing gingerol is inhaled, this compound can affect the olfactory nerve receptors in the nose. This sends signals to the brain and stimulates certain parts, including the amygdala and limbic system, which play a role in processing emotions and memory. Therefore, the scent of ginger can affect mood and emotions. Gingerol provides a warm sensation on the skin that can provide a feeling of comfort and relaxation when used in massage or massage oil. The mechanism of action of zerumbone can have an aromatherapy effect by the way this scent is inhaled in aromatherapy, it can stimulate olfactory nerve receptors in the nose and send signals to the brain and has vasodilator properties that can stimulate the expansion of blood vessels in the skin. This can increase blood flow to the applied area and can help relieve muscle tension and improve blood circulation. Meanwhile, kamfen gives a sharp, fresh and woody aroma. The aroma of kamfen can affect olfactory nerve receptors and influence aromatic perception. Kamfen has antiseptic properties, which means it can help reduce the growth of bacteria and mold. This makes it useful in aromatherapy to keep skin clean and healthy.

CONCLUSION

The research that has been done, it can be concluded that the essential oil produced from the combination of Ginger Oil (Zingiber officinale var Rubrum) and Lemongrass (Cymbopogon citratus (DC) Stapf) from the distillation process can be processed into a preparation of Massage Oil Aroma Therapy.

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