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**ARTICLE REVIEW: THE USE OF AROMATHERAPY FOR
ANOSMIA PATIENTS DURING THE COVID-19 PANDEMIC**

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Abstract

This study was conducted to determine the benefits of aromatherapy for anosmia people after exposure to COVID-19. Aromatherapy was often used for health therapy so it has the potential for the treatment of anosmia. This study is necessary to be done because there are a lot of anosmia sufferers and there is no effective way to treat it. The study of post-COVID-19 anosmia continues to evolve and more needs to be researched. This study was conducted by reviewing several literature studies originating from international and national journals, theses, and dissertations with a year limit of the last 10 years. From some literature it is known that aromatherapy can reduce the risk caused by anosmia. Aromatherapy can enter through the body's circulatory system and olfactory system through fragrances, It will affect the condition, memory, and psyche of a person. Although not very effective, further research on the benefits of aromatherapy for people with anosmia is necessary.

Keywords: Anosmia; Aromatherapy; COVID-19

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INTRODUCTION

Indonesia is an archipelagic country with a tropical climate with a wealth of flora and fauna in it. One of the richness of flora owned by Indonesia is flora that has high economic value and benefits, namely flora or plants that produce essential oil. Indonesia is a tropical country that has about 40 types of plants that are produced and have the potential as a source of aromatherapy, in addition Indonesia has about 12 types of plants as producers of other essential oils which are still in the development stage for an industrial scale (Kementerian Perdagangan RI, 2011).

Aromatherapy is an aroma that comes from essential oils or pure essential oils that are used as therapy to help maintain or improve immunity which affects health and inspires, refreshes and calms one's body and soul (Astuti *et al.*, 2015). Aromatics possessed by plants are influenced by the content of essential oils in the form of essential oils, for example lemongrass.

Essential oils are one of the by-products of metabolic processes carried out by plants, essential oils are formed due to reactions between various chemical compounds found in plant metabolism in the presence of water (Puspitasari, 2016). Essential oils have a characteristic that is volatile at room temperature without

decomposition, has a bitter or slightly spicy taste, has a distinctive fragrant smell according to the smell of the producing plant, generally essential oils are insoluble in water and soluble in organic solvents (Aryani *et al.*, 2020).

To date, the COVID-19 pandemic has still not seen to end in Indonesia, even this pandemic is still not visible when the peak point will be reached. COVID-19 is a disease caused by the SARS Cov-2 virus that originated in Wuhan, China. People infected with this virus will have symptoms such as fever, cough, and difficulty breathing (Yuliana, 2020). In addition, people with COVID-19 can also experience anosmia.

Anosmia is a condition in which a person cannot feel the sensation of smell which can be caused by many factors, these factors can be related to upper respiratory tract infections (Samuel & Riyanto, 2021). Losing the ability to smell is something that is not desirable because it can affect one's appetite, one cannot smell the aroma of food. It will cause a person to lose his appetite. Based on research, anosmia sufferers have the ability to feel food which shows a score ($p < 0.001$), this score indicates a correlation between anosmia sufferers and the ability to taste food (Aditya, 2020).

Based on these things, the researchers conducted a review of articles that aimed to provide information about the effects of aromatherapy on anosmia sufferers and plants that can be used as aromatherapy and their benefits.

MATERIALS AND METHODS

The method used in this research was literature study. Literature study is a method that conducts a systematic examination with the aim of finding out a particular topic which will then be studied scientifically using various kinds of literature (Efron & Ravid, 2019). This review article used literature sources from international and national journals, theses, and dissertations with a date limit of the last 10 years. The data sources were carried out through search engines in the form of google and indexed journal sites by sinta, garuda, etc.

The search was conducted using the keywords anosmia, aromatherapy, and the benefits of aromatherapy.

RESULTS AND DISCUSSION

Anosmia Due to SARS-Cov2 Virus Infection

Anosmia is a condition in which a person is unable to smell odors. In this case, anosmia can be caused by a mechanical blockage that prevents odors from reaching the olfactory nerve which then

causes a loss of olfactory function so that odors cannot be smelled by the senses (Kiay *et al.*, 2021).

Anosmia is one of the symptoms of COVID-19 caused by infection with the SARS-Cov2 virus. It can be seen based on study conducted by Klopfenstein *et al.*, (2020) which stated that fifty-four of the 114 patients suffering from COVID-19 stated that they had anosmia. Symptoms of anosmia in COVID-19 patients are uncertain when a person will experience symptoms of anosmia when confirmed positive for COVID-19. Based on study conducted by Gilani *et al.*, (2020) found around eight patients who tested positive for COVID-19, 2 others were male, while 6 of them were female, they reported symptoms of anosmia that occurred a few days after the onset of fever and other symptoms. It was related to the presence of a viral infection that attacked the olfactory system of COVID-19 patients (Suzuki *et al.*, 2007).

To date, the exact cause of anosmia in COVID-19 sufferers has not been found. But broadly anosmia can be categorized into conductive or sensorineural (Goncalves & Goldstein, 2016). Conductive is an olfactory disturbance caused by airflow obstruction in the nose and is reversible when the obstruction disappears. While sensorineural loss is caused by dysfunction

or dysfunction in OE, it can be permanent or temporary (Han *et al.*, 2020).

If viewed from the SARS-Cov2 virus receptor, it has ACE2 receptors that express and distribute to the nervous system, it can cause neurological manifestations directly or indirectly (Mao *et al.*, 2020). SARS-Cov2 first infected goblet cells and ciliated cells of the nasal mucosa, it had implications for the primary transmission of SARS-Cov2 through infectious droplets. At a later stage, SARS-Cov2 was detected in the tears of COVID-19 patients which can cause nasal infections through the nasolacrimal tract (Colavita *et al.*, 2020; Gengler *et al.*, 2020; Sungnak *et al.*, 2020).

Aromatherapy Source

Aroma therapy is a form of treatment or therapy using aromas derived from volatile plants, this aroma can affect a person's mood, health, and cognitive functions (Ermaya *et al.*, 2019).

Essential oils or known as essential oils, aromatic oils produced by plants, essential oils can come from any plant organ such as leaves, flowers, stems, bark, and roots (Puspitasari, 2016).

Essential oils are often used as compositions in making perfumes because essential oils have a distinctive aroma, therefore essential oils have the potential

to be used as a source of aromatherapy. Based on research conducted by Ermaya *et al.*, (2019) it is known that the aroma of essential oils affects locomotor activity in mice. It is since the aroma that comes from the essential oil will increase alpha waves in the brain so that someone who inhales the aroma will feel relaxed (Sholehah *et al.*, 2020).

Aromatherapy Benefits

Aromatherapy products have various health benefits, namely calming, reducing depression, anxiety and stress (Sitepu, 2021). Aromatherapy can be used to maintain the balance of body systems that can keep the body healthy and as a holistic treatment that functions as a balancer for body functions (Setyoadi & Kushariyadi, 2011). The menthol aroma that comes from mint leaves has benefits as an anti-inflammatory that can make the respiratory tract smooth (Ningrum, 2019; Siswantoro, 2017). Aromatherapy is one of the treatments used to treat loss of smell in COVID-19 patients, it is since essential oils contain many compounds such as terpenes that can reactivate the glomeruli in the olfactory bulb (Koyama *et al.*, 2021).

How Aromatherapy Works

By mechanism, aromatherapy will enter through the body's circulation system and olfactory system through fragrances, it will affect a person's emotional, memory, and psychic conditions (Safaah *et al.*, 2019). If viewed based on inhalation theory, essential oils will make changes in the limbic system which is part of the brain, this is related to emotions and memory (Nababan, 2019).

The stages of smell are divided into 3 stages, namely the attachment of odor molecules to nerve receptors, namely the olfactory epithelium, then the smell will be transmitted to the olfactory center at the

base of the brain, at this stage the neuron cells will translate various odors and will deliver them to the limbic system and forwarded. to the hypothalamus which will then be processed there, the next step is the essential oil elements will be delivered to the circulatory system and chemical agents in the body carried out by the hypothalamus (Nababan, 2019).

On study Chioca *et al.*, (2013), conducted a study on the effects of lavender essential oil on rats, it was found that the anxiolytic effect of the essential oil has a role in anosmia sufferers, but on the olfactory system the effects of aromatherapy cannot be felt.

Table 1. Sources of essential oil content that can be used as aromatherapy

| Plant | Part | Essential Oil Content | Method | Utility |
|---|--------------------------------|--|---|--|
| Clove Oil (<i>Syzygium aromaticum</i>) | Clove Flower | 47.57% | Steam distillation method (Prianto <i>et al.</i> , 2013) | As a sedative and reduce stress levels (Amalia, 2020) |
| | Clove flower stalk or peduncle | Essential oil (6%); Eugenol (89-95%) | soxhlet method (Prianto <i>et al.</i> , 2013) | |
| | clove leaf | Essential Oils (2-3%); ugenol (80-85%) | soxhlet method (Prianto <i>et al.</i> , 2013) | |
| Betel Oil (<i>Piper betle</i>) | Green Betel Leaf | 5-(2-propenyl)-1,3-benzodioxole (25.67%); Eugenol (18.27%); and 2-methoxy-4-(2-propenyl) phenol acetate (8%) | Hydrodistillation method (Sugumaran <i>et al.</i> , 2011) | Analgesics and immunomodulator (Sofiani & Pratiwi, 2013) |
| Lime Oil (<i>Citrus aurantifolia</i>) | Rind | -pinene (15.85%); Limonene (33.33%); Citral (10.54%); Neral (7.94%); - terpinen (6.8%); - bergamotene (3.38%); linalool (2.45%); nerol (1.52%) | Steam distillation method (Ekawati, 2017) | Immunomodulator, increases appetite, and stabilizes the nervous system (Kartika <i>et al.</i> , 2015; Sofiani & Pratiwi, 2013) |
| Cananga Oil (<i>Cananga odorata</i>) | Ylang Flower | Eugenol (8.86%); linalool (21.08%); linalool acetate (16.14%) and other components | Hydrodistillation method with Microwave heating (Seyawan, 2013) | Analgesic, antidepressant, anti-anxiety, and improve mood or mood (Firenza, 2020) |
| Nutmeg Oil (<i>Myristica fragrans</i>) | Nutmeg | Myristicin (22.6%); trimyristicin (2.25-3.35%) | Steam distillation method (Ma'mun, 2020) | As a sedative and overcome insomnia (Amalia, 2020; Susanto, 2020) |
| | Nutmeg Flesh | Myristin and safrole (2-18%); hydrocarbon monoterpenes, such as: -pinene and -pinene (61-88%); monoterpenic acid (5-15%) | Steam distillation method (Sipahelut & Telussa, 2011) | |
| Cinnamon Oil (<i>Cinnamomum burmanni</i>) | Cinnamon Bark | Cinnamaldehyde (55-65%); Eugenol (4-8%); some types of aldehydes; benzyl benzoate; and felandren. | Steam distillation method (Apriyani <i>et al.</i> , 2015) | Provides a relaxing effect and reduces pain (Tarigan, 2018) |

Aromatherapy Product Form

Essential oils derived from plant

extracts such as cloves, nutmeg, betel leaf, lime, ylang flower, and cinnamon bark can be used as an aromatherapy product with various pharmaceutical preparations. According Anggraini (2015) aromatherapy products include the following :

1. Aromatherapy Essential Oil

Its uses vary, it is heated in a furnace (aroma therapy electric furnace or aromatherapy candle furnace), smeared on cloth, smeared on light bulbs and smeared on air ducts.

2. Aromatherapy Incense

Incense is not only used for certain religious activities, now the form of incense has become a form of aromatherapy.

3. Aromatherapy Candle

Regarding aromatherapy, there are 2 types of candles used, candles for furnace heating and aromatherapy candles. The candle used to heat the aromatherapy furnace does not have an aromatherapy scent because its function is to heat the furnace containing aromatherapy essential oils. While aromatherapy candles are candles that when burned will emit an aromatherapy scent.

4. Aromatherapy Massage Oil

A new variation of aromatherapy is in the form of massage oil. The smell is the same as other forms of aromatherapy, only the shape and method of use is different.

5. Aromatherapy Salt

Bathing using warm salt water is believed to be able to remove toxins/poisons in the body. To use this aromatherapy salt, you should take a bath by soaking or it can also be used to soak certain body parts such as the soles of the feet to reduce your fatigue.

6. Aromatherapy Soap

Not only fragrant, but various ingredients/extracts from plants were immersed in this soap so that this soap was also good for body health, such as smoothing the skin, keeping insects away and others.

CONCLUSION

During the COVID-19 pandemic, the term anosmia was known, anosmia is a condition in which a person cannot smell. Anosmia itself affects a person's appetite. Based on the results of studies conducted, aromatherapy can reduce the risk of anosmia. Aromatherapy has a role in anosmia sufferers, but on the olfactory system the effects of aromatherapy cannot be felt.

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