



ROLL ON AROMATHERAPY FORMULA ACTIVITY TEST ESSENTIAL OIL SYZYGIUM AROMATICUM L.

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ABSTRACT

Syzygium aromaticum L. is a plant that contains essential oils. The essential oil of the clove plant is produced from the distillation of Syzygium aromaticum L.s, stalks, and leaves. The components of Syzygium aromaticum L. content are eugenol, eugenol acetate and carophyllene. The specifications of each part of the essential oil of Syzygium aromaticum L. (21.3%), eugenol (78-95%) using the Soxhlet method were about 47.57%. The purpose of this study was to determine the activity and effectiveness of the roll on formulation of Syzygium aromaticum L. essential oil. This study was experimental with the experimental design used was the posttest only controlled group. The research object was divided into two groups of treatment and control. The results showed that the roll on formulation of Syzygium aromaticum L. essential oil had a calming effect on mice. The most effective roll on formulation of Syzygium aromaticum L. essential oil is 7% concentration.

Keywords: roll on Syzygium aromaticum L; essential oil; aromatherapy roll on activity

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INTRODUCTION

Syzygium aromaticum L. is a plant that contains essential oils. The essential oil of the clove plant is produced from the distillation of Syzygium aromaticum L.s, stalks, and leaves. Essential oils are odorous substances contained in plants, have volatile properties, because at room temperature they can evaporate, the term essential is used because essential oils have an odor from the original plant (Revika Rachmaniar, Haruman Kartamihardja, Nitta Nurlita Sari 2015). The components of Syzygium aromaticum L. content are eugenol, eugenol acetate and carophyllen (Bustaman 2016). In general, the content of Syzygium aromaticum L. distillation is in the form of essential oil which has two main components, namely, eugenol (80-90%) and carophyllene (10-20%). The specifications of each part of the essential oil of Syzygium aromaticum L. (21.3%), eugenol (78-95%) using the Soxhlet method were about 47.57%. In general, the content of Syzygium aromaticum L.s contains essential oil, eugenol, oleanolic acid, phenillin, carophylline, resin, and gum (Hartati et al. 2017). Essential oil of clove (6%), eugenol (89-95%). Essential oil of clove leaves (2-3%), eugenol (80-85%) (Saiful Hadi 2012).

The essential oil content in the form of eugenol has a specific chemical structure. Applications in the pharmaceutical industry, eugenol is used as a dental analgesic drug

and eugenol derivatives are used as a drug for lung disease, and as a neuro-sedative. Applications in the food and beverage industry, eugenol is used as a preservative and fragrance. In addition, eugenol is used to make vanillin as a fragrance and flavor. The benefits of vanillin, which are often used as a scent for food, candy, chocolate and perfume. *Syzygium aromaticum* L.s are also used as raw material for making cigarettes. From some of the things mentioned above, the essential oil which is owned by *Syzygium aromaticum* L. can be used in the manufacture of aromatherapy products for pharmaceutical preparations. Forms of aromatherapy products currently circulating in the market include roll on, essential oils, massage oils, bath soaps, salts, candles, incense, toothpaste. This roll on aromatherapy preparation is the most widely used preparation today. Apart from its unique, easy and attractive use, this preparation is able to relieve soreness, dizziness, headaches and other unpleasant conditions. The addition of essential oils to this preparation is about 2% of the total other composition (Muchtaridi 1991) and (Muchtaridi, A. Subarnas. 2006).

The development of *Syzygium aromaticum* L. essential oil as aromatherapy needs to be done as an effort to increase the utilization of essential oil products. The fragrance components of essential oils quickly interact when inhaled by animals and humans. These compounds interact with the central nervous system and directly stimulate the olfactory system, then this system will stimulate the nerves in the brain under the equilibrium of the cerebral cortex (Buckle 1999). The odorous compounds of the essential oils of plant materials have also been shown to affect locomotor activity. Locomotor activity is a movement activity as a result of changes in electrical activity caused by changes in the permeability of the Post-synaptic membrane and by the release of transmitters by presynaptic neurons in the central nervous system (Ali B, Al-Wabel NA, Shams S, Ahamad A, Khan SA 2015). Based on this background, the researcher is interested in conducting research on *Syzygium aromaticum* L. plants to be used as a roll on aromatherapy preparation. It is hoped that the roll on aromatherapy preparation of *Syzygium aromaticum* L. essential oil can be an alternative as a natural aromatherapy that is safe to use.

METHOD

The tools used in this research include: wheel cage, stirring rod, measuring cup, glass beaker, gel mold, electric stove, analytical balance and oven. Materials used in this study include: essential oil of *Syzygium aromaticum* L.s, nipagin, alcohol, cetilalkohol and distilled water. This study is an experimental study with the experimental design used was the posttest only controlled group. The research object was divided into two groups of treatment and control. The animals used were ddY male white mice, weighing 25-30 grams. Animals taken are 2-3 months old (Muchtaridi, A. Subarnas. 2006).

Aromatherapy Roll on Formulation and Manufacturing

Menthol 30%, camphor 5% and olive oil (phase 1). Mix phase 1 with phase 2, namely 3%, 5%, 7% *Syzygium aromaticum* L. added with 100% base ad. After that the product is evaluated (Emi et al., 2004).

Aromatherapy Activity Testing

Locomotor activity in this study was used to determine the motion activity of mice given the roll on formula. This is done to determine changes in electrical activity caused

by changes in permeability. These changes occur in the post-synaptic cell membrane and by the release of the transmitter by presynaptic neurons in the central nervous system (Gilman, A.G., T.W. Rall, A.S. Nies 1991).

The method used to determine locomotor activity is by counting the amount of motion of mice to rotate the wheel. The method of analyzing the count of the motion of mice by way of after giving a substance the amount of motion of mice decreased statistically compared to the control Mice were weighed and randomly divided into 3 groups, each group consisting of 1 animal. Locomotor activity testing is carried out based on the Wheel Cage method. After installing the essential oil for 60 minutes, the mice were placed on a rotary wheel. The number of wheel rotations was recorded for 60 minutes after the mice were placed on the tool. The number of rounds of the test group compared to the control. All data obtained were calculated and statistically analyzed, with dosage factors (Ermayal* et al. 2019).

RESULTS

Roll on Aromatherapy Activity Testing

Aromatherapy roll on activity testing is done by visually observing the aromatherapy activity test results shown in table 1.

Table 1.

The Results of Testing for Roll on Aromatherapy Essential Oil Activities Syzygium Aromaticum L.

Group	Average Number of Wheel Turns%				% Turns Decrease
	Before Treatment		After Treatment		
	Time (minutes)	Lap	Time	Lap	
			(minutes)		
control	60	45	60	45	0%
F1 (3% v/v)	60	42	60	32	13,33%
F2 (5% v/v)	60	44	60	31	17,33%
F3 (7% v/v)	60	43	60	29	19,44%

DISCUSSION

Based on table 1, it can be seen that the higher the concentration, the higher the locomotor effect. This is because fragrant compounds such as Syzygium aromaticum L. essential oil have also been shown to affect locomotor activity (Buchbauer 1993). In Table 1, it can be seen that the locomotor activity decreases after giving the roll on clove oil essential oil. The strongest activity in reducing locomotor activity by essential oil Syzygium aromaticum L. was with a concentration of 7% v/v, with an average decrease in rotation of 19.44% where the mice experienced calm after being smeared with the roll on essential oil Syzygium aromaticum L., a roll on essential oil Syzygium aromaticum L. can be used to calm or have a sedative effect. The decrease in locomotor activity of mice was caused by eugenol, which is an essential oil from clove oil. Fragrant compounds due to the presence of essential oils of a clove plant material have also been shown to affect locomotor activity (Buchbauer 1993).

The results showed that the fragrant aroma of Syzygium aromaticum L. essential oil had a direct effect on the brains of humans and animals. This is because our noses and animals have the ability to distinguish more than 100,000 different odors (Ni Luh 2012). The pungent and calming aroma of the roll on of Syzygium aromaticum L. essential oil

affects parts of the brain related to mood, emotions, memory, and learning. This is comparable with Ni luh et al. (2012) by inhaling the scent of lavender, it will increase the alpha waves in the brain and these waves help us to relax the limbs that smell it. In addition, there are also related studies such as inhaling the scent of jasmine flowers, which increases beta waves in the brain which increase agility and alertness. In this study using mice to see the decrease in motion after being given the roll on aroma of *Syzygium aromaticum* L. essential oil. With this treatment, it can be seen that the effectiveness of the roll on essential oil *Syzygium aromaticum* L.

In some cases of depression, a soothing aroma can come from plants with a strong odor or flower essential oils with a strong odor, as this is beneficial for people who need emotional balance. The soothing scent of the *Syzygium aromaticum* L. roll on essential oil is helpful in many ways, such as someone who is depressed may need a scent that enhances energizing spirits. The benefits of the aromatherapy roll on essential oil *Syzygium aromaticum* L. products for human health include relaxing the body, refreshing the mind, improving mood, and as a placebo in healing diseases that provide physiological effects (Valentine Sofiani 2013).

CONCLUSION

The roll on formulation of *Syzygium aromaticum* L. essential oil has a calming effect on mice. The most effective roll on concentration of essential oil is 7%.

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