

EFFICACY OF NATURAL HERBAL AS ECTOPARASIT AGENT

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Abstract. In part of Indonesian students have lice (*Pediculus humanus capitis*) on their hair. Head lice are a type of blood-sucking parasite that usually lives in the head. If not treated properly, head lice are at risk of causing a variety of problems, from scalp infections to decreased sleep quality. Indonesian natural sources have potential to get rid of head lice such as Akar Wangi (*Chrysopogon*), Sirih (*Piper betle*) and Zaitun (*Olea*). In Indonesia, fragrant root oil is called java vetiver oil. Lice oil composed coconut oil 1000 ml, chrysopogon oil 25 ml, piper betle oil 25 ml and Olea oil 25 ml. Lice oil is applied to the roots of the hair while massaged every 3 days. The result of this in vivo test indicated combination of chrysopogon oil, piper betle oil and olea oil can kill the lice head and their eggs, effectively for one month.

Key words: chrysopogon, piper betle, olea, coconut oil, lice oil, lice shampoo, eggs lice

1. INTRODUCTION

Indonesia is the rich country with herbal plant such as fruit, leaves, stems, roots, rhizomes and tubers. Herbal plant are very beneficial for human health and beauty also animal health and production. [1] This experiment design to know the potential of herbal composition on chrysopogon, piper betle, olea and coconut oil as an ectoparasites.

Chrysopogon root contains many secondary metabolites. More than 300 compounds which are dominated by compounds with cyclic and bicyclic structures of sequencerpenoids such as vetivone, khumisol, cadanene, cedrena and β -humulene. Therefore the roots of fragrant root plants are the primary products of this plant. This plant is famous for its ability to produce essential oils or known as vetiver oil. This oil is widely used in the process of making perfumes and cosmetics. This oil is widely used as perfume and cosmetics because it contains esters composed of carboxylic compounds vetinenat acid and vetivenol alcohol compounds [2].

Vetiver oil has great potential to be used as insecticide. Extract of vetiver oil has repellent and toxicant properties toward ant, ticks and cockroaches.

Essential oils from betel leaves contain flying oils (betlephenol), sesquiterpenes, starches, diatases, sugars and tanners and kavikol which have the power to kill germs, antioxidants and fungicides, anti-fungi. Betel efficacious eliminate body odor caused by bacteria and fungi. Betel leaf is also to hold

bleeding, heal wounds on the skin, and disorders of the digestive tract. It also is frowning, expectoration, shed saliva, hemostatic, and stop bleeding. The active ingredient of phenol and kavikol Betel leaves in the forest can also be used as a vegetable pesticide to control the pests [3].

Many benefits of this olive tree. In addition to delicious fruit, wood from olive trees is also very good, hard and beautiful. In addition to being eaten olives are also used as food flavoring. If the fruit is squeezed, we can get the oil. This oil can be used as a salad dressing and lately it is widely used for cosmetic ingredients that can maintain moisture and firmness of the skin so it is believed to make the skin youthful [4].

Pure coconut oil contains phenolic compounds, and has the potential as a good antioxidant. Besides that, virgin coconut oil also contains lauric acid, caprylate, and caprate which can support the growth of probiotics in the digestive tract and function against bad bacteria, fungi, to have antibiotic properties. Coconut oil, helps in healthy hair growth and gives hair shiny. Coconut oil is also very effective in reducing protein loss which can cause unhealthy hair quality. Coconut oil contains saturated fatty acids which can be a way to get rid of head lice. Coconut oil is also very good for scalp health because it contains vitamin E so that the scalp and hair remain healthy and soft.

Head lice are most commonly transmitted through direct contact with the sufferer's head. This allows head lice to move from the sufferer's head to another person's head through objects used on the head, such as hats, scarves, combs, pillows, towels, and headphones. Head lice are a type of blood-sucking parasite that normally lives in the head. If it's already lodged in the scalp, female lice will produce eggs that are attached to the strands of hair. Head lice are transmitted through humans. Children at risk of contracting head lice when their classmates are affected. However, it is also possible for adults to be infected if they live together with someone who has head lice. Saliva produced by head lice causes a person to feel itching on his scalp. Its small size makes it difficult to eradicate parasites with bare hands. Moreover, if head lice lay eggs, the eggs that have hatched will be clearly visible attached to the hair. This research was conducted to test the efficacy of natural herbal as ectoparasite agent.

2.MATERIAL AND METHODS

The materials used in this experiment are lice oil that contains 1000 ml coconut oil, 25 ml chrysopogan oil, 25 ml piper beetle oil and 25 ml olea oil. Probandus are 10 children infected ectoparasites *Pediculus humanus capitis*. Preparation sample of Lice Oil formulation Coconut oil 100 ml, Chrysopogan oil 25 ml, Piper beetle oil 25 and Olea oil 25 ml. Preparation sample of Lice Shampoo formulation: Shampoo based 100 ml, Chrysopogan oil 25 ml, Piper beetle oil 25 and Olea oil 25 ml.

Used Lice oil : Hair comb before sleep, Apply lice oil the scalp of the hair until blended, Cover with a towel, Next morning wash hair with Lice Shampoo, Application of Lice Oil twice for one week

Used Lice Shampoo : Wet the hair with water, Remove shampoo from the bottle in the palm of your hand, Rub it all over the hair, Rinse thoroughly with water, Dry with a towel, Comb with a lice comb, Application of Lice Shampoo twice for one week

3.RESULT AND DISCUSSION

Hair lice are small parasites that survive by sucking human blood. Just like mosquitoes, the more blood that is sucked, the bigger the size will be. This small ectoparasite causes a red rash on the back of the neck and the back of the earlobe. Flea eggs are no less annoying because they look like dandruff attached to the strands of hair. One effective way that has been widely used since long ago to get rid of head lice is with a serit comb. This comb is made specifically with teeth that are tighter than others. So, lice will get caught easily when you comb your hair.

This pediculus is a parasite which has to suck human blood to sustain life. Has 4 life cycle stages of eggs, larvae, nymphs and adults. Fleas are gray and become reddish after sucking blood. The egg is placed along the hair and follows the hair growth so that the tip is more mature eggs [5].

Causes of Head Lice Appearance and eggs in the hair is not merely present, but the appearance of lice can be caused by various factors. As for some of the causes of the appearance of lice, among others, such as: Use of comb: the comb that you use former lice sufferers will indirectly make lice eggs stick to your hair. After about 8 days the eggs will hatch and cause the appearance of head lice. Use of towels: Even though most towels are used for the body, if you use a towel from a lice sufferer, they may be infected with your hair. Rarely treat hair: lack of hygiene of hair such as shampooing, treatments, etc. can cause lice to appear. There are still a lot of other things that cause the appearance of lice on the scalp, such as patient headscarves, hats, and much more.

Coconut oil is known to contain high vitamin E which is good for hair and skin care. For those of you who have head lice, this oil also has a natural ingredient that is effective in overcoming the problem. The high content of fatty acids, such as capric acid, caprylic acid, lauric acid in it can make hair follicles become more slippery so that nits are difficult to stick. In addition, this natural oil is anti-bacterial which helps prevent lice from reproducing and protects the scalp from irritation.

Head lice (*Pediculus humanus capitis*) is an obligate ectoparasite that infected human hair and scalp. Head lice infestations lead to a disease called *Pediculosis capitis*. Head lice infestations occur endemically and can affect anyone of any age group, gender and race. However, the infestations mostly occur among children. Head lice are not vectors for any diseases, yet head lice infestations that are not treated lead to various effects such as irritation and nuisances such as a reduced quality of sleep in children at night due to itching. This study aimed to analyzed head lice prevalence, infestation level and risk factors due to head lice infestation among primary schoolchildren in Sabang City, Aceh Province. This study was conducted in two districts and each district selected five primary schools consist two primary schools in urban areas and three primary schools in rural areas. A total of 350 schoolchildren was examined to diagnose head lice infestation by a disposable comb (single use comb) in order to avoid transmission of lice from one student to another. The results showed that overall head lice infestation is a common health problem among primary schoolchildren in Sabang City. The prevalence of head lice infestation in Sabang city was 27.1% and range 9.1 – 50.0% on each school. The head lice prevalence was higher in schools located in Sukakarya District (31.4%) and in schools located in rural areas (27.8) than in urban areas (26.6%). Head lice infestation closely related to difference gender, the prevalence in girls was higher (48.0%) than boys (7.3%). Girls have about 11.8 times of risk can be infected head lice infestation than boys. Head lice infestation occurred among primary schoolchildren in aged 6 – 14 years olds but there was no significant relationship based to aged of group. In general, schoolchildren with head lice infestation could be found more than 10 nymphs and adults. Risk factors due to head lice infestation was (1) hair characteristics; children with hair length above the shoulder have 4.7 times of risk and hair length extended that shoulder have 9.656 times of risk can be infected head lice infestation (2) co-sleeping habit with other person can caused 2.1 times of risk, (3) 2.8 time of risk if they have sibling with head lice infestation and 2.1 time of risk if they have friends with head lice infestation, (4) head lice infestation in last three months can caused 6.9 times of risk still infested with head lice when examine was conducted, (5) never treatment with pediculicide can caused 3.0 times of risk still infested with head lice when examine was conducted. Family economic factors such as parents education and parents occupation, number of sibling and number of family members who live at home showed no significant relationship due to the head lice infestation among primary schoolchildren [6].

Pediculus humanus capitis is found among children of 7 – 12 years, and dominated by girls, elementary school education, low social-economic status, unhealthy way of life, comprising children living in densely populated orphanages. Children infested with head lice suffer from head itches and irritation. It is recommended that orphanages make efforts of head lice prevention, control and eradication as well as instilling the awareness in governesses and orphans of the importance of scalp and hair hygiene [7].

First, by using a natural flea shampoo. Use a natural flea treatment shampoo on the first day, then do a thorough comb with a flea conditioner and special comb to remove all dead lice and eggs. This can be a successful method because the enzymes in the flea shampoo formula can break the flea shell to death and they cannot develop resistance against them.

Second, use olive oil. According to experts, olive oil is one of the most effective treatments. Apply olive oil to your child's head and leave it for eight hours. This will make head lice die.

Third, use tea tree oil or tea tree oil. This oil is effective for clearing the itchy head from lice. The study found that when one percent of tea tree oil solution was applied to the head, it would kill 100 percent of the tick in 30 minutes. Use a drop of oil on the back of your neck first to make sure he doesn't have an allergic reaction [8]

4. CONCLUSION AND SUGGESTION

The result of this study shows that herbal combination have a potential as an anti-ectoparasites agent. The composition are coconut oil, chrysopogon oil, piper beetle oil and olea oil. Lice and eggs died with in 1 month application.

Suggestion this research to add tea oil in this Lice oil formulation.

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REFERENCES

- [1] R Widyani, M H Hermawan, K Tirtodihardjo. 2018 *In Vitro Studies: Potential Of Natural Source Herbal As Anti Cholesterol Agent*. IOP Conference Series: Earth and Environmental Science Vol 207: 1-16.
- [2] Chahal, K. K., Kaushal, S., & Sandhu, A. K. 2015. Chemical composition and biological properties of *Chrysopogon zizanioides* (L.) Roberty syn. *Vetiveria zizanioides* (L.) Nash-A Review. *Indian Journal of Natural Products and Resources (IJNPR)*[Formerly *Natural Product Radiance (NPR)*], 6(4), 251-260
- [3] Sudarmo, S: 2005. *Pestisida Nabati, Pembuatan dan Pemanfaatannya*, Penerbit Kanisius.
- [4] Green PS. 2002. "A revision of *Olea* L. (Oleaceae)". *Kew Bulletin*. 57 (1): 91–140. doi:10.2307/4110824. JSTOR 4110824
- [5] Triana Agustin. 2016. *Kutu Pada Rambut Anak* . Ikatan Dokter Anak Indonesia. <http://www.idai.or.id/artikel/seputar-kesehatan-anak/kutu-rambut-pada-anak>
- [6] Yuni Nindia. 2016. *Prevalensi Investasi Kutu Kepala (Pediculus humanus capitis) dn Faktor Resiko Penularannya pada anak sekolah dasar di kota Subang Provinsi Aceh*. Thesis Sekolah Pasca Sarjana. IPB. <https://repository.ipb.ac.id/handle/123456789/82843>
- [7] Maria Vonny Rumampak. 2014. Peranan kebersihan kulit kepala dan rambut dalam penanggulangan epidemiologi *Pediculus humanus capitis*. *Jurnal Ners* Vol: 19 No 1 April 2014 : 35-42. <https://media.neliti.com/media/publications/117264-ID-none.pdf>
- [8] Torie Natalova. Med Com. 2018. *Minyak Zaitun untuk basmi kutu rambut anak*. <https://www.medcom.id/rona/keluarga/9K543A0k-minyak-zaitun-untuk-basmi-kutu-rambut-anak>