RED BETEL LEAF EXTRACT SERUM AS AN ALTERNATIVE ANTI-HEAD LICE TREATMENT

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Article

RED BETEL LEAF EXTRACT SERUM *(Piper ornatum)* AS AN ALTERNATIVE ANTI-HEAD LICE TREATMENT

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A B S T R A C T

Lice (*Pediculus humanus capitis)* or known as head lice are ectoparasites that live on the human scalp, the main symptom felt is itching on the scalp caused by lice bites on the scalp. Lice are often found in children aged 7-10 years and also in adults, lice can live on the scalp, body and hair of the pubic area, and can cause itching, scabs, loss of concentration, lack of sleep, and lack of confidence. One way to overcome this is to use anti-lice shampoo. Some studies state that betel leaf extract can kill head lice. Thus, article aims to find out what serum concentration of red betel leaf extract *(Piper ornatum)* is effective against the death of head lice (*Pediculus humanus capitis)*.

I. INTRODUCTION

Head lice (Pediculus humanus capitis) is a parasite that causes hair problems that often occur in the community. Adults are about the same as sesame seeds, have 6 legs (each with claws), and are brownish, black to grayish-white. Adult lice can live up to 30 days on the head of a person. To live, adult fleas need to eat blood several times a day. Several studies show that the infection rate *of Pediculus humanus capitis* in elementary school children in Cambodia is 44.3%, Iraq is 14.43% (Amin et al, 2019), Saudi Arabia is 31.2% (Mohamed et al, 2018). The prevalence and predisposition of *pediculosis capitis* in East Lamongan is 78.57% (Massie et al, 2019), in Pekanbaru it is 57.5% (Maryanti et al, 2018). The appearance of head lice is usually influenced by several factors including how often a person washes their hair, *gender*, using a shared bed, hair length and hair types (Lukman *et al*, 2018).

According to (Widinda *et al*, 2020) stated that betel leaf decoction can affect the movement of head lice which slow down and then eventually die. Red betel leaf *(Piper ornatum)* is rarely used because of

its unpleasant smell but betel has various benefits including killing germs, reducing body odor, and also able to nourish the digestive tract, betel that is often found is red betel and green betel.

Thetreatment of Pediculus humanus capitis in natural insecticides can be done with flavonid compounds, in addition to flavonid compounds, alkaloid compounds are also compounds that are toxic to organisms that can cause the death of *Pediculus humanus capitis*. Some head lice medicinal preparations that are widely circulated on the market are lotions, liquids, and creams. Preparations that are currently in great demand by the public are serum preparations. Serum itself is a preparation that has low viscosity and a main ingredient, namely red betel leaf extract in treating head lice (*Pediculus humanus capitis)*.

II. METHODS

The method used was an experimental method of 3 groups plus positive control and negative control with 2x repetition. Experimental methods were used with the aim of finding out what serum concentrations of red betel leaf extract (*Piper ornatum)* were effective against the death of head lice (*Pediculus humanus capitis)*. Positive control in the form of peditox brand head lice drug with 1% permethrin content and negative control without medication.

A. Location and Time of Research

Red betel leaves will be taken in the Bangkalan Mlajah area and will be carried out at the Ngudia Husada Madura Health Center Laboratory.

B. Research Procedure

Sterilization of Research Tools

high concentration of active ingredients so that it provides a comfortable effect and easily absorbs on the surface of the skin. One advantage of using serum preparations is that the active substances contained in the serum are more than other cosmetic preparations so that the serum is faster and more effective in overcoming skin problems. In the world of cosmetics, the use of serum can provide *lifting up, revitalizing, moisturizing, nourishing, antiinflammatory, antiaging* and *anti-stress* effects. Serum can be applied topically to the face, neck, and eyelids (Thakre, 2017).

From the above problems, researchers want to make a serum preparation with the

Tools made of glass or glass are washed first, then dried and wrapped in HVS paper and then put into an autoclave with a temperature of 121°C for 15 minutes at a pressure of 1 atm.

Making Red Betel Leaf Extract

Red betel leaves are washed thoroughly, then cut into small pieces and then in bleders. Then put it in a maceration container, then add 96% ethanol until the sample is submerged. Then it is covered and stored for 24 hours in a dark place protected by light while occasionally stirring. Next it is filtered, separated pulp and filtrate. The pulp is again extracted with ethanol with the same treatment as much as 3 x 24 hours. Then the ethanol extract obtained is evaporated until a thick ethanol extract is obtained.

Sample Solution Preparation

A solution with a test concentration of 5% is made; 10%; 15%. Table. 1 Betel Leaf Extract Serum Formulation

Component	Function	Concentration %		
		F1	F2	F3
Betel leaf extract	Active substances	5	10	15
Natrosol	*Gelling agents*	0,75	0,75	0,75
Glyserin	Humectants	25	25	25
DMDM Hydantoin	Preservatives	0,5	0,5	0,5
Ethoxydiglycol	Penetrate	2	2	2
Aquades	Solvent	100 Ads	100 Ads	100 Ads

been made, grind until homogeneous and put in a serum bottle. Furthermore, evaluation of serum preparations was carried out including organoleptic examination, homogeneity, pH measurement, dispersion, and physical quality stability.

Data Analysis

Evaluation of serum preparations

Some tests that will be carried out on the evaluation of serum preparations are organoleptis tests, homogeneity tests, pH tests, dispersion tests, physical stability tests, and serum testing of red betel leaf extract against the response of lice (*Pediculus humanus capitis)*.

Serum Testing of Red Betel Leaf Extract Against Response (*Pediculus humanus capitis)*

This test is carried out on lice (*Pediculus humanus capitis)* placed on a petri dish and dripped with serum red betel leaf extract

IV. DISCUSSION

From table 1 above, it can be seen that the average time *Pediculus humanus capitis* experienced an immobile response to betel leaf extract serum at different concentrations.

Making Betel Leaf Extract Serum Preparation

The procedure for making betel leaf extract serum preparations begins with weighing each ingredient such as *natrosol, glyserin, DMDM Hydantoin, ethoxydiglycol*, and *aquadest*, then natrosol is heated to a temperature of 45ºC while stirring until an even suspension is formed, then stop heating, put the base ingredients successively into the natrosol mass and mix until homogeneous, add betel leaf extract with a concentration of 5%, 10%, and 15% into the base formulation that has which will be observed the response of the tick and the length of reaction time until the tick dies

III. RESULT

The results that have been carried out in the laboratory of Stikes Ngudia Husada Madura obtained the following results

Table 2. Table captions should be placed above the table

Concentration	Time of Death (minute)		Sum	Average
Negative Control	170	170	340	170
Positive Control	10	10	20	10
Concentration: 5%	27	25	52	26
Concentration: 10%	20	18	38	19
Concentration 15 %	15	15	30	15

At a concentration of 15%, the average time is 15 minutes.

The results showed that a concentration of 15% was most effective for spotting the death of head lice (pediculus humanus capitis), as it had the fastest time compared to

concentrations of 5% and 10%. Red betel decoction contains several active compounds act as an inhibitor of the respiratory process, resulting in parasite death (Handoyo, 2014). While saponins can inhibit larval growth, saponins can damage cell membranes and interfere with insect metabolism (Purwaningsih et al., 2015). Alkaloids function as natural insecticides because these compounds attack brain neurosecretory cells in insects (toxic to nerves). Inhibits the growth of pupae and growth hormones so as to cut or stop the larval cycle (Rahmawati, 2017). And tannins function as plant defenses against insects by blocking insects from digesting food. Tannins will bind proteins in the digestive system that insects need for growth so that the process of protein absorption in the digestive system becomes disrupted. The very bitter taste causes insects not to eat so that the larvae will starve and die (Yunita et al., 2009). From the results of the above statistical calculations it can be said that it is more effective to see the death of head lice (Pediculus humanus capitis) at a concentration of 15%.

Efforts to treat lice can use chemicals that have a hot effect so that they are uncomfortable in use, while natural ingredients for lice are generally made from alkaloid compounds. That basically alkaloids serve as poisons for living things. These alkaloid compounds work by damaging the nervous system in parasites. Other compounds that are anti-lice are flavonoids. Among them can work as a powerful inhibitor of breathing, functioning as an antioxidant (Handoyo, 2014).

From the study above, the most effective concentration was obtained at 15% with a dosage form in the form of serum applied to the scalp, where after some time will including flavonoids, saponins, alkaloids and tannins. Flavonoid compounds in parasites experience a slowed motion response and then die.

V. CONCLUSION

From the results of the study, the serum concentration of red betel leaf extract (*Piper ornatum*) was effective against the death of head lice (Pediculus humanus capitis) at a concentration of 15% against the death of head lice (*Pediculus humanus capitis*).

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