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HAIR TONIC ACTIVITY TEST OF THE LEAVES OF THE LAW OF THE LAW (SANSEVIERIA TRIFASCIATA PRAIN) ON HAIR GROWTH OF MALE RABBITS (LEPUS NIGRICOLLIS)

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Abstract

Mother-in-law's tongue contains saponins, alkaloids, and flavonoids which have effectiveness as hair growth. This study aims to determine whether hairtonic preparations of mother-in-law's tongue leaf extract (Sanseviera Trifasciata Prain) can affect hair growth in male rabbits (Lepus nigricollis). This research is experimental, the extraction of mother-in-law's tongue leaf was carried out by maceration method using 96% ethanol. The concentrations used were 10%, 15%, and 20%. The study was conducted by taking 6 strands of the longest rabbit hair in each section, counted on days 0, 7, 14, 21, and 28 and weighing rabbit hair on day 28. Statistical test results showed that Hair Tonic leaf extract of mother-in-law's tongue (Sanseviera Trifasciata Prain) had the effectiveness of growing male rabbit hair (Lepus nigricollis) and Hair Tonic of mother-in-law's tongue leaf extract (Sanseviera Trifasciata Prain) 20% with sig. (18,772 > 2,226) had hair growth effectiveness which was comparable to the positive control.

Keywords: Effectiveness Test of Hair Tonic, Leaf Extract of Mother-in-law's (Sanseviera Trifasciata Prain) Leaf, Male (Lepus nigricollis).

INTRODUCTION

Hair is the crown of beauty, hair has an important role, namely as a skin protector from various kinds of stimuli. First as a protector from physical stimuli such as heat, cold, dry air, humidity, and sunlight. Second, as a protector from mechanical stimuli such as blows, rubbing, and pressure. Third, as a protector against chemical stimuli such as various chemicals and sweat (Tranggono and Latifah, 2007).

Different types of hair grow at different rates, scalp hair lengthens about 0.3 mm each day. The hair growth cycle consists of three continuous phases, namely the growth phase, the transition phase and the resting phase. The growth phase lasts about two to eight years, about 80% of the hair is in this phase. After the growth phase is followed by a transitional phase that lasts for several weeks, in this phase the hair separates from the roots and moves upward towards the scalp. The next phase is the resting phase, this phase lasts for 90-100 days and is a period when hair

falls out by itself or is pushed out by newly growing hair so that a new cycle can begin (Thorat, 2010).

There are several main problems related to hair such as pigmentation problems (fading), dandruff and hair fall (loss) (Thorat, 2010). Hair loss is a natural cycle of hair, but when there are more than 100 strands of hair loss in a day, hair loss needs to be taken seriously because the hair will continue to thin or even go bald. It is categorized as severe hair loss that occurs due to abnormalities in the hair cycle caused by many factors including; lifestyle, hormonal changes, stress, excessive diet, pollution, chemical hair cosmetics and drug consumption (Harmanto, N., 2006). Therefore, hair care is not enough just to use shampoo and conditioner, because hair is a living cell so it needs to be nurtured, cared for and given fertilizer so that it can live a healthy and beautiful life. One way is to use hairtonic (Aliyah, 2018).

Hairtonic is a cosmetic preparation that stimulates hair growth, which is used to promote hair growth or stimulate hair growth in baldness or hair loss. In the hair tonic used as a solvent other than aquadest is ethanol.

One of the plants thought to have the effect of fertilizing/accelerating hair growth is the mother-in-law's tongue leaf (Sansevieria trifasciata prain). Mother-in-law's tongue leaves contain abamagenin, cardenolin, flavonoids, saponins, and polyphenols. According to Jatmiko Susilo in 2018, researching mother-in-law's aloe leaf extract has an effect as a hair grower, with a concentration of 15% showing the highest effectiveness for accelerating hair growth and comparable to hair tonics on the market.

The aims of this study were to determine the hairtonic effectiveness of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) on hair growth in rabbits, to determine the most effective concentration of hairtonic extract of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) on hair growth in rabbits, and to determine whether the hair Tonic leaf extract of mother-in-law's tongue (Sanseviera trifasciata prain) meets the requirements. The benefits of Research for writers, institutes, and readers are can add knowledge and experience about the effectiveness of hairtonic preparations of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) on rabbit hair growth, to increase the repertoire of literature literature and can be used as an illustration in further research, and to input and increase public knowledge about mother-in-law's tongue extract (Sanseviera). trifasciata prain) as growth and beauty of hair. The hypothesis is H0 There is no effectiveness of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) on male rabbit hair growth and H1 There is no effectiveness of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) on male rabbit hair growth.

RESEARCH METHODS

Population

Population is a generalization area consisting of: Objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then drawn conclusions. (Sugiyono, 2012). Based on this opinion, the population in this study was the mother-in-law's tongue plant (Sanseviera trifasciata prain) and rabbits.

Sample

The sample is part of the number and characteristics possessed by the population. (Sugiyono, 2012). Based on the opinion above, the sample in this study was the leaf extract of the mother-in-law's tongue (Sanseviera trifasciata prain) obtained from Cirebon, West Java and male rabbits.

Sampling

Sampling was carried out by simple random sampling method, namely sampling from the population was carried out randomly without regard to the existing strata in the population. This way if the members of the population are considered homogeneous. (Sugiyono, 2012).

In this study the authors used experimental research methods, experimental research carried out quantitatively, namely analyzing the observational data obtained by direct observation.

Experimental research is a method used to achieve the effect of treatment on others under controlled conditions (Sugiyono, 2012).

Data source

The data source in this observation was the effectiveness of hairtonic extract of mother-in-law's tongue leaf extract (Sanseviera trifasciata Prain) with positive control, negative control, normal control, and hairtonic preparations of mother-in-law's tongue leaf extract with concentrations of 5%, 10%, 15%. As well as data from the observation of the stability of the hairtonic formula of mother-in-law's tongue leaf extract using the Cycling test method.

Data collection

Data collection from this experiment can be seen from the hairtonic physical test which includes organoleptic test, homogeneity test, pH test, and specific gravity. In addition, it can also be seen from the hairtonic effectiveness test of mother-in-law's tongue leaf extract (Sanseviera trifasciata prain) by observing hair length, average weight of hair growth, and hair thickness. And physical stability test with Cycling test method.

Test the effectiveness of the hair tonic of the leaves of the mother-in-law's tongue on hair growth.

In this study, the effectiveness test was carried out using the et tanaka method using 5 male rabbits aged 4-5 months with a weight of 1.5-2 kg. Rabbits were adapted for one week prior to the study. The rabbit's back was shaved with a size of 3x3 cm. Smearing is done 2 times morning and evening for 28 days as much as 0.25 ml. Rabbits are divided into 6 areas of basting, namely:

a) Region I: as a negative control was given a hairtonic basis.
b) Region II: as a positive control given hairtonic on the market.
c) Region III : As a normal control (without smearing).
d) Region IV: given the extract of the mother-in-law's tongue leaf at a concentration of 5% w/v.
e) Region V: given the extract of the mother-in-law's tongue leaf at a concentration of 10% w/v.
f) Region VI: given the extract of the leaves of the mother-in-law's tongue at a concentration of 15% w/v.

The test animals were rabbits that had been shaved on the right and left back areas, smeared with hairtonic preparations of mother-in-law's tongue leaf extract,

each at a concentration of 5%, 10%, and 15% as much as 0.25 ml, carried out 2 times in the morning and evening. In the normal control area, the rabbits were not treated. In the rabbit negative control area, 0.25 ml of hairtonic base was smeared. In the positive control area, the rabbit was smeared with hairtonic on the market. Observation of hair length in each area was carried out on the 7th, 14th, 21st, and 28th days. To see the effectiveness of the test formula in each group, a comparison was made using a positive control.

Analysis of the Effectiveness of Hair Tonic Leaf Extract of Aloe Vera on Hair Growth at 5%, 10%, and 15% Concentrations.

Testing the effectiveness of Hair tonic combination of mother-in-law's tongue leaf extract (Sanseviera Trifasciata prain) by observing hair length, average weight of hair growth, and hair thickness. The data obtained from the research results were analyzed using SPSS version 24 for Windows. The normality test was then continued with the homogeneity test.

1. If the data is normally distributed and the data variance is the same (homogeneous), then a one-way ANOVA test is performed.
2. If the data is normally distributed but the data variance is not the same (not homogeneous) then the Kruskal-Wallis test is performed.
3. If the data is not normally distributed, then add data (sample), discard outlines, transform data or change the analysis to non-parametric

Most Effective Concentration Data Analysis

After the data is entered into the table, then the data is analyzed using SPSS version 24 for Windows, first the data obtained are tested for normality and homogeneity so that the data can be analyzed with the one-way ANOVA test. One-way ANOVA aims to prove the hypothesis that has been made whether there is effectiveness or not.

1. If the data is normally distributed and the data variance is the same (homogeneous), then a t-test is performed.
2. If the data is normally distributed but the data variance is not the same (not homogeneous), then the Mann-Whitney test is performed.
3. If the data is not normally distributed, then add data (sample), discard outlines, transform data or change the analysis to non-parametric.

The test animals were rabbits that had been shaved on the right and left back areas, smeared with hairtonic preparations of mother-in-law's tongue leaf extract, each at a concentration of 5%, 10%, and 15% as much as 0.25 ml, carried out 2 times in the morning and evening. In the normal control area, the rabbits were not treated. In the rabbit negative control area, 0.25 ml of hairtonic base was smeared. In the positive control area, the rabbit was smeared with hairtonic on the market. Observation of hair length in each area was carried out on the 7th, 14th, 21st, and 28th days. To see the effectiveness of the test formula in each group, a comparison was made using a positive control.

Most Effective Concentration Data Analysis

1. Normality Test

Normality test is a test used to determine the collected data has been normally distributed or taken from a normal population. The classical

method of testing the normality of a data is not so complicated. Based on the empirical experience of several statisticians, the data with a total of 30 numbers (n>30), can be assumed to be normal. Commonly referred to as a large sample. However, to provide certainty, the data owned is normally distributed or not, it is better to test the normality statistic. Because it is not certain that data that is more than 30 can be ascertained to be normally distributed, for that we need a proof. Normality statistical tests that can be used include Chi square, SPSS method Kolmogorov Smirnov, Liliefors, Shapiro Wilk Jarkue Bera. How to make a decision: if p > 0.05% or > 5% then the data is normal, otherwise if p <0.05% <5% then the data is not normal. (Sudjana, 2005).

2. Homogeneity Test

Homogeneity test is a test of whether or not the variations of two or more distributions are equal. Homogeneity test was conducted to determine whether the data in the variables X and Y are homogeneous or not (Sudjana, 2005). How to make a decision: if F count < F table, then it is homogeneous, otherwise if F count > F table, it means it is not homogeneous (Sudjana, 2005).

3. One-way Anova Test

ANOVA is used as an analytical tool to test research hypotheses which assess whether there is a difference in means between groups. The final result of the ANOVA analysis is the value of the F test or F count. F value Calculate this which will be compared with the values in table f. If the calculated f value is more than f table, it can be concluded that accepting H1 and rejecting H0 or which means that there is a significant difference in the mean of all groups. One-way ANOVA, serves to test the difference between two or more groups where only one factor is considered

4. Partial Test (t Test)

This test was conducted to compare the effectiveness or not of each concentration of X1 (5%), X2 (10%), and X3 (15%).

If the test results tcount ttable, it means that the variable is quite effective.

To determine whether Ho is rejected or accepted by comparing tcount with ttable, the test criteria are as follows.

1. Ho is rejected if tcount > ttable, it means Ha is accepted.
2. Ho is accepted if tcount < ttable, it means Ha is rejected.

RESULT AND DISCUSSION

The determination of the mother-in-law's tongue (Sanseviera trifasciata prain) was carried out at the YPIB Cirebon Pharmacy College and it was true that the plant was the mother-in-law's tongue (Sanseviera trifasciata prain). Van Steins (1978). attached determination 1.

Material Collection Results

Results and manufacture of simplicia Tongue-in-law (Sanseviera trifasciata prain) dark green tongue-in-law used as much as 2 kg obtained from the Rajagaluh area, Rajagaluh district, Majalengka district.

Results of Making Simplicia Tongue-in-law (Sanseviera trifasciata prain).

The mother-in-law's tongue (Sanseviera trifasciata prain) produced is 150 grams of powder from 2 kg.

Results of Making Mother-in-law's Tongue Extract (Sanseviera trifasciata prain).

Mother-in-law's tongue (Sanseviera trifasciata prain) was extracted by maceration method. A total of 100 grams of Lidah-in-law leaves were soaked in 1000 ml of 96% ethanol for 7 days. In the first filtration, 760 ml of maserate was produced. The liquid extract obtained from the evaporator was 252 ml and then evaporated again with a water bath to obtain a total concentrated extract volume of 25 grams so that the extract yield was as follows:

$$\text{Rendemen (\%)} = \frac{\text{Berat estrak total}}{\text{Berat simplisia}} \text{ x } 100\%$$

$$= \frac{25 \text{ gram}}{100 \text{ gram}} \text{ x } 100 \text{ \%}$$

$$= 25$$

Results of Making Hair Tonic Preparations Mother-in-law's Tongue Leaf Extract (Sanseviera trifasciata prain)

Material	Function	**Formulation (grams)**			
		X1	**X2**	**X3**	**K-**
Mother-in-law's Tongue Leaf Extract	Active substance	10	15	20	-
Etanol 96%	Solvent	30	30	30	30
Propilenglikol	Humectants	15	15	15	15
Metil Paraben	Preservative	0,02	0,02	0,02	0,02
Menthol	Anti-irritant	0,3	0,3	0,3	0,3
Na Metabisulfit	Anti-oxidant	0,01	0,01	0,01	0,01

Aquadest sampai	Pelarut	100 ml	100 ml	100 ml	100 ml

Evaluation of Hair Tonic Preparations

Organoleptic observations include shape, color, and odor, the results of the organoleptic test can be seen from the table below:

Table 4.2 Results of organoleptic observations of hair tonic preparations

No.	Hairtonic Preparations	Shape	Color	Smell
1.	Formula 1	Liquid Solution	Light green	Mentol
2.	Formula 2	Liquid Solution	Light green	Mentol
3.	Formula 3	Liquid Solution	Light green	Mentol

The extraction method used in this study uses one of the cold methods, namely maceration. The maceration method was chosen because this method has simple procedures and equipment and is based on the active substances contained (Agoes, 2007). The purpose of maceration in this study was to obtain extracts of the leaves of the mother-in-law's tongue (Sanseviera trifasciata prain).

The extract obtained from maceration of the mother-in-law's tongue leaves as much as 760 ml, and after evaporation obtained a thick extract of 25 g of basil leaves with the characteristics of the extract being thick blackish green, characteristic odor, bitter taste. The yield of the mother-in-law's tongue leaves is 25%. According to the literature (Anonymous, 2000) the yield is not less than 26.7%. Judging from the results of the yield calculation, the yield of the Lidah Mertua (Sanseviera trifasciata prain) extract was not less than the predetermined level. The yield results can be influenced by extract quality factors such as

biological factors of the Lidah Mertua plant (Sanseviera trifasciata prain) and chemical factors such as internal factors, namely the content of chemical compounds qualitatively or quantitatively and external factors, namely the extraction method, the amount and type of solvent used in the extraction. (Anonymous, 2000).

There are 3 formulas of aloe vera ethanol extract hair tonic. Each formula has the same ingredients. However, they differ only in the level of extract concentration. The concentrations used are 10%, 15%, and 20%. This concentration difference aims to compare the level of stability of the preparation and the activity of the preparation.

Hair Tonic Leaf Extract of Tongue-in-law (Sanseviera trifasciata prain) concentration of 10%, 15%, 20% and negative control was carried out with an evaluation test aimed to determine whether the hair tonic preparation met the specified requirements. Evaluation of hair tonic includes organoleptic test.

The first step to test hair growth in male rabbits is to shave the hair on the rabbit's back using scissors and a hair clipper. This shaving is done with the aim that the hair roots are maintained and can grow normally (Soegihardjo & Kurmawati, 2010). The hair tonic preparation of the mother-in-law's tongue extract which was tested for activity consisted of 4 formulations with different levels of concentration in each formula. Formula 1 with an extract concentration of 0% which also acts as a negative control, formula 2 with an extract concentration of 10%, formula 3 with an extract concentration of 15%, and formula 4 with a concentration of 20%.

In this effectiveness test a positive control is needed to compare the effectiveness hair growth. The positive control used was hair tonic preparations on

the market (NR). The smearing of the preparation is carried out once a day. The first day of smearing is considered day 0. Hair length measurements in rats were carried out once every 7 days starting from day 0 after smearing, namely on day 0, day 7, day 14, day 21, and day 28. To measure the hair of male white rabbits, caliper aid. In the process of hair growth it takes several processes known as the hair growth cycle. The first phase is known as the anagen phase or the growing phase, where hair grows because it increases in number.

CONCLUSION

From the research data on the effectiveness test of the Hair Tonic Leaf Extract of Tongue-in-law (Sanseviera trifasciata prain) against white male rabbits (Lepus nigricollis), it can be concluded that the Hair Tonic Leaf Extract of Lidah Mertua (Sanseviera trifasciata prain) has effectiveness as hair growth against rabbits. White male (Lepus nigricollis) and Hair Tonic Leaf Extract of Lidah Mertua (Sanseviera trifasciata prain) at a concentration of 20% had the same effectiveness as the positive control.

BIBLIOGRAPHY

Adzhar Arsyad, 2019, Rabbit Morphology and Anatomy file:///C:/Users/lenovo/Downloads/Morphology%20dan%20Anatomy%20Rabbit%20(Lepus%20nigricollis)%20_%20Scientists%20Biology.html

Ministry of Health of the Republic of Indonesia & Directorate General of Drug and Food Control, 1985

Ministry of Health of the Republic of Indonesia . 1985. Indonesian Cosmetics Formulary. Jakarta: Directorate General of Drug and Food Control.

Ministry of Health of the Republic of Indonesia. 2000. General Standard Parameters of Plant ExtractsWang, Ning Tao, Huang, Yi Shin, Lin, Meng Hsien, Huang, Bryan, Perng, Chin Lin, & Lin, Han Chieh. (2016). Chronic hepatitis B infection and risk of antituberculosis drug-induced liver injury: Systematic review and meta-analysis. *Journal of the Chinese Medical Association*, *79*(7), 368–374

Iswari, 2007, Anatomy of Hair in books.google.co.id/books?id=1Pu7FYDfTNoC&pg=PA33&dq=anatomy+hair+human&hl=id&sa=X&ei=PDkYU6mzOMbz0gH7loHICA&redirsc=y#v=onepage&q=anatomy of human hair accessed & on date=14 human hair August at 9:00 am.

Martin, A., Swarbick, J., Cammarata, A. 1983. Physical Pharmacy. Volume II 3rd edition translated from Physical Pharmacy by Joshita. Jakarta: UI Press.

Mitsui, T. 1993, New Cosmetic Science. Amsterdam: Elsavier B.V At-hair-.html accessed on October 13, 2017 at 19:20 WIB.

Rostamailis. 2005. Body, Skin, and Hair Care. Jakarta:Rineka Cipta.
Rowe, R.C., Sheskey, P. J., Owen, S. C. 2009. Handbook of Pharmaceutical Exipients (6thed.)
Steve Parker. 2007. Encyclopedia of the Human Body. Jakarta: Erlangga.
Syamsuni, H. A. (2007). Recipe Science. Jakarta: EGC.
Tiwari, P., Kumar, B., Kaur, M., Kaur, G., & Kaur, H. (2011, Jan-March). Phytochemical
Screening and Extraction : A Review. Internationale Pharmaceutica Sciencia, 1(1), 103-104. Tranggono, Retno Iswari, & Latifah, Fatma. 2007. Cosmetic Science Handbook.
Thorat, 2010, Herbal Treatment For Hair Loss, Vishal Junnar Seva Mandal Institute of Pharmacy
Wade, A. And P. J. Weller. 1994. Handbook of Pharmaceutical Exipients (4th ed.) zzzLondon: The Parmaceutical press. Wiwik, 2011, Hair Abnormalities in http://whanday.blogspot.com/2011/11/kelainan-kelainan-