



## Ethnopharmacology Study of Traditional Herbs as Anti-dandruff and Anti-baldness in Amarasi District, Kupang Regency

*(Studi Etnofarmakologi Ramuan Tradisional Sebagai Antiketombe dan Antikebotakan di Kecamatan Amarasi Kabupaten Kupang)*

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### ABSTRACT

**Backgrounds:** Hot weather in Indonesia can cause problems with hair and scalp health, including dandruff (seborrheic) and cause hair roots to become weak, making it easier for hair loss or alopecia to occur. The Amarasi people still do hair and scalp treatments with traditional plants. **Objectives:** This study aims to determine the ethnopharmacology of herbs as anti-dandruff and anti-baldness in Amarasi sub-district, Kupang district, including plant names, plant properties, plant parts, processing methods, usage methods and usage rules. **Methods:** This research is a qualitative descriptive study with an exploratory observational design. The data was obtained in the form of a survey by interviewing respondents with the help of a questionnaire. The sample in this study was a traditional healer (Hatra) who understood the use and use of anti-dandruff and anti-baldness drugs. Sampling was carried out using a purposive sampling technique namely *Hatra* who were over 20 years old and had experience as a hatred for more than 3 years and above. The sample in this study was 17 traditional healers (Hatra). **Results:** result research shows that there are 18 plants consisting of 8 single plants and 16 herbs that are used and efficacious as anti-dandruff and anti-baldness. The plant parts used are leaves, fruit, seeds, sap/mucus, tube and oots. the method of processing plants for hair and scalp care by burning, splitting, fryinsqueezing and g, mashing, then, how to use it is washed, smearing, washedmassagingsaged. Rules for using plants 1-2 times a week. **Conclusion:** The Amarasi community has traditional plants and herbs that can be used as a treatment for scalp problems, including anti-dandruff, preventing hair loss and nourishing hair (anti-baldness). These plants based on research literacy studies conducted by previous researchers proved to have potential in the treatment of anti-dandruff and antibody.



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## **INTRODUCTION**

Tropical climate in Indonesia can cause problems with the health of the hair and scalp, including dandruff (seborrheic) and weakening the hair roots, making it easier for hair loss or alopecia (Amelia, 2017). Hair loss in patients with alopecia describes thinning of the front of the hair. The incidence and population of alopecia depend on age and race whereas population and severity increase with age. The results showed that alopecia or baldness occurred in the white male population at the age of 30 years as much as 30%, at the age of 50 years 50% at the age of 70 years as much as 80% (Nyoman and Utami, 2017). Dandruff hair becomes one of the causes of reduced self-confidence that can hinder a person's comfort (Sukmawaty and Masriany, 2021). One way to overcome dandruff and baldness is to use traditional plants. The utilization of plants as traditional plants is a better chemical. This is because traditional plants are natural and do not cause harmful side effects to human health. From an economical point of view, the introduction of traditional plants is still too little, this is because at this time modern medicine has become easier in all service facilities (Kurniawan 2015). Based on observations and interviews with people in Amarasi District, nutritious plants in Amarasi District are very abundant where most of the residents are farmers so they use the surrounding plants to cure diseases such as anti-baldness and anti-dandruff. Amarasi sub-district has health care facilities, but service facilities are still very minimal and inadequate people tend to use traditional plants for treatment. The use of medicinal plants as efficacious plants is passed down orally and in writing by the ancestors to the next generation. However, research on medical plants and how to use them has never been carried out so that the types and ways of using medicinal plants in the area have not been fully identified, so data is needed to reveal the utilization and use of traditional medicines as empirical data and further research is carried out so that medicinal plants can be cultivated and well maintained, especially the use of plants as anti-baldness and anti-dandruff.

Based on this background, it has become basic information that must be studied ethnopharmacologically for the search for traditional medicines or herbs for the treatment of dandruff and anti-baldness, so researchers are interested in conducting research with the title "Ethnopharmacological Study of Traditional Herbs as Anti-Dandruff and Anti-Baldness in Amarasi District, Kupang Regency" with the aim is to inventory plants that have pharmacological activity in the treatment of anti-dandruff and anti-baldness. The data will be compared with the results of research on potentially efficacious plants based on research literacy studies that have been carried out.

## **MATERIAL AND METHODS**

### **Materials**

Instruments in research it is in shape interview guideline, record keeping and documentation tools.

## Methods

This research is a qualitative descriptive study with an exploratory observational design. This research was conducted in Amarasi District, Kupang Regency in March-October 2022. Sample from this research, namely the people of Amarasi sub-district, Kupang Regency who work as traditional healers/Hatra (Shaman/Healer/Medicine) who understand the use and utilization of plants for hair and scalp care, especially as anti-dandruff and anti-baldness. Data were obtained by interviewing respondents or informants with the help of a questionnaire. The sampling technique used was purposive sampling based on information from liaisons (community leaders, village heads, village heads, informal leaders, health services, puskesmas and other trusted sources) who are over 20 years old and have more than 3 years of experiences.

## RESULTS AND DISCUSSION

In this study, the identification of plants and traditional ingredients obtained from Traditional Healers (Hatra) in the Amarasi sub-district, Kupang Regency, amounted to 18 people. Some of the information and expertise about traditional ingredients was obtained by Traditional Health Careers based on information from parents, family, and traditional elders which were passed down from generation to generation (empirical) and based on experiences that occurred. The Amarasi community prefers to use traditional ingredients compared to the health care centres because they still maintain public trust in the efficacy of traditional medicine which is usually carried out with special rituals and certain prayers. (magical power).

Based on the results of identification by researchers by conducting interviews with traditional healers, there are 18 types of plants used by traditional healers in treating dandruff and anti-baldness. From 18 The plant is divided into single plants and herbs that are used as anti-dandruff and anti-baldness. Single plants amounted to 8 plants while the herb amounted to 16 herbs. The plant parts used in the anti-dandruff treatment are leaves, sap/mucus, fruit, seeds, juice, tubers, stems and other parts. Some of the plants that are taken also have special rituals including being taken at certain times, they should not be exposed to the shadow of people and talk when they take parts of the plant. The results of plant identification can be seen in the following table:

Table 1. Types of Plants used in the treatment of anti-dandruff and anti-baldness

| No. | Plant Name | Species                    | Plant Parts | Plant Benefits  |
|-----|------------|----------------------------|-------------|---|
| 1.  | Aloe vera  | <i>Aloe vera</i>           | Sap/Mucus   | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 2.  | Chilli     | <i>Capsicum frutescens</i> | Leaf        | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul>                                |
| 3.  | Avocado    | <i>Persea americana</i>    | Fruit       | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul>                                |

|     |                  |                                      |                      |   |
|-----|------------------|--------------------------------------|----------------------|---|
| 4.  | Lime             | <i>Citrus aurantifolia</i>           | Fruit                | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 5.  | Lime             | <i>Citrus citrix</i>                 | Fruit                | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 6.  | Hazelnut         | <i>Aleurites moluccana</i>           | Seed                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 7.  | Coconut          | <i>Cocos nucifera</i>                | Fruit (Coconut milk) | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 8.  | Mangkogan        | <i>Polyscias scutellaria</i>         | Leaf                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 9.  | Garlic           | <i>Allium sativum</i>                | Bulbs                | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Prevent Hair Loss</li> <li>• Nourish Hair</li> </ul>    |
| 10. | Red onion        | <i>Allium cepa</i>                   | Bulbs                | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 11. | Onion            | <i>Allium cepa Linnaeus</i>          | Bulbs                | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 12. | Lemongrass       | <i>Cymbopogon nardus (L.) Rendle</i> | stem                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 13. | Banana           | <i>Musa paradisiaca</i>              | stem                 | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 14. | banyan           | <i>Ficus benjamina</i>               | Root                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 15. | Hibiscus flower  | <i>Hibiscus rosa-sinensis</i>        | Leaf                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 16. | Nail Girlfriend  | <i>Lawsonia inermis</i>              | Leaf                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 17. | Elephant Grass   | <i>Pennisetum purpureum</i>          | Leaf                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 18. | Gala-gala / Turi | <i>Sesbania grandiflora</i>          | Leaf                 | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |

Table 2. Types of Single Plants and Traditional Herbs used in the treatment of anti-dandruff And anti-baldness

| No.             | Plant Name | Processing Method           | Usage                             | Usage Time  | Efficacy  |
|-----------------|------------|-----------------------------|-----------------------------------|-------------|---|
| • Single Plants |            |                             |                                   |             |   |
| 1.              | Aloe vera  | Split and take the sap      | smear/massaged                    | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 2.              | Chilli     | Pounded the leaves          | smear/massaged                    | 2 x a month | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul>                                |
| 3.              | Avocado    | Fruit pounded and mashed    | smear                             | 1 x Week    | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul>                                |
| 4.              | Lime       | Fruit cut                   | Rubbing/Applied on hair and scalp | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 5.              | Hazelnut   | Burned and ground the seeds | smear                             | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |

|                     |  |   |                     |             |   |
|---------------------|--|---|---------------------|-------------|---|
| 6.                  | Coconut  | The fruit is grated and the coconut milk is taken | in shampoo          | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 7.                  | Mangkokan                                      | The leaves are pounded and mashed                 | in shampoo          | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| 8.                  | Garlic   | Finely ground                                     | smear               | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |
| • Traditional Herbs |  |   |                     |             |   |
| 1.                  | Hibiscus Flower + Grated Coconut + Kaffir lime | Smoothed + Grated + Squeezed                      | Washed              | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 2.                  | Elephant Grass + Grated Coconut                | Finely ground + grated + squeezed                 | Washed              | 1 x 2 Weeks | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 3.                  | Banyan Root + Grated Coconut + Papaya Leaves   | Finely ground + grated + squeezed                 | Washed + massaged   | 1 x Week    | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 4.                  | Banyan Root + Lime + Aloe Vera                 | Pounded + Split + Squeezed                        | in massage          | 1 x Week    | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 5.                  | Lime + Aloe Vera                               | Split and Squeeze                                 | Apply / Massage     | 1 x Week    | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 6.                  | Shallots + Coconut Oil                         | Sliced Onion                                      | Apply / Massage     | 1 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 7.                  | Gala-gala/Turi Leaves + Grated Coconut         | Finely ground                                     | Apply / Massage     | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 8.                  | Kaffir Orange + Turi Leaves + Plain Vinegar    | Squeezed + Pounded + Vinegar                      | In the shampoo      | 1 x Month   | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> </ul>   |
| 9.                  | Onion + Grated Coconut                         | Sliced + Grated + Squeezed                        | In the shampoo      | 1 x Week    | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 10.                 | Kaffir Orange + Onion + Grated Coconut         | Split + Squeeze + Slice + Squeeze                 | Washed and massaged | 2 x Week    | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>  |
| 11.                 | Lemongrass + Grated Coconut + Orange           | Crushed + Squeezed                                | Washed / Massaged   | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Nourish Hair</li> </ul> |

|     |   |                                    |                    |             |  |
|-----|---|------------------------------------|--------------------|-------------|--|
| 12. | Lime +<br>Coconut +<br>Shallot                | Split + Squeeze +<br>Slice         | massaged           | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming Dandruff</li> </ul>  |
| 13. | Aloe +<br>Pecan                               | Split and Pound                    | Apply /<br>Massage | 2 x Week    | <ul style="list-style-type: none"> <li>• Overcoming dandruff</li> <li>• Preventing Hair Loss</li> <li>• Fertilize</li> </ul> |
| 14. | Banana<br>Saplings +<br>Rice Wash<br>Water    | Finely ground + Rice<br>Wash Water | In the<br>shampoo  | 1 x 2 Weeks | <ul style="list-style-type: none"> <li>• Nourish Hair</li> </ul>   |
| 15. | Mangkogan<br>+ Coconut<br>oil                 | Blended and mixed                  | massaged           | 1 Week      | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Fertilize</li> </ul>                                |
| 16. | Nail<br>Girlfriend<br>Leaves +<br>Coconut Oil | Blended and mixed                  | massaged           | 1 x 2 Weeks | <ul style="list-style-type: none"> <li>• Preventing Hair Loss</li> <li>• Fertilize</li> </ul>                                |

Based on the identification results and the results of literature studies that have been carried out, an explanation of medicinal plants that have pharmacological effects such as anti-dandruff and anti-baldness can be described, including *Aloe vera*. *Aloe vera* contains sap/mucus which is commonly used by the Amarasi people to prevent hair loss, treat dandruff and nourish hair. Based on the literature, the lignin contained in aloe vera gel contains 30% aloin, namely barbaloin, isobarloin, resin, aloe emodin, and amorphous aloinaloin which stimulates hair growth and prevents hair loss, besides that it also contains various antibiotics and antifungals that can slow or prevent microorganisms. causes of scalp and hair diseases (Hendrawati, et al., 2018). This is because Lignin substance penetrates and seeps into the scalp, and substance penetrates the scalp the seeping fluid (Hendrawati, et al., 2018). As for other substances that are useful for reducing hair loss such as vitamins A, and C, amino acids, Cu, Inositol, enzymes, minerals and others (Masyitoh, et al., 2019).

The people of Amarasi village also often use Avocado (*Persea americana*) to prevent hair loss and nourish hair. Avocado fruit extract contains monounsaturated fatty acids, namely oleic acid. Oleic acid can treat hair loss by slowing hair loss and accelerating hair growth. Oleic acid is a powerful antioxidant that can protect hair from the threat of chemical products, pollution and ill-treatment of hair as well as hair damage caused by a lack of nutrient supply to the hair. In addition, avocado contains high protein so it helps hair growth to be fertile and shiny (Sari and Wibowo, 2016).

The next plants are *Citrus aurantifolia* and *Citrus citrix*. *Citrus aurantifolia* is believed to be used in the treatment of hair and scalp. The Amarasi community recognizes that *Citrus aurantifolia* fruit can treat dandruff and hair loss and also nourishes hair. Based on the literature, lime contains essential oils of limonene and linalool. It also contains flavonoids, such as poncharin, hesperidin, rhoifolin, naringin and citric acid. These compounds are what make *Citrus aurantifolia* efficacious to nourish hair, eliminate

dandruff and reduce hair loss (Mirawati, 2012). While *Citrus citrix*, believed by the Amarasi community to be efficacious in preventing hair loss and overcoming dandruff. In addition, it makes hair healthier and shiny. Based on the literature, *Citrus citrix* contains essential oils and hesperidin in flavonoids that can strengthen hair follicles, so kaffir lime can be used to treat hair and hair roots. *Citrus citrix* also functions to overcome dandruff and dull hair and eliminate odours in the hair and scalp. According to the analysis, lime juice is used to get rid of dandruff because it contains essential oils, flavonoids and saponins which are effective in the problem of dandruff (Sinaga and Wahyudi, 2012).

The next plant that is used as an anti-dandruff and anti-baldness is *Aleurites moluccana*. According to the Amarasi people, the flesh of *Aleurites moluccana* seeds can be used to help the process of hair fertilization. Based on the literature, pecan seed flesh contains linoleic and linolenic acids which are long-chain unsaturated fatty acids and are classified as essential fatty acids with very high levels so they are good for building healthy skin and hair tissue. This is also due to the very low molecular weight of linoleic and linolenic acids compared to other oils, allowing *Aleurites moluccana* oil to penetrate the hair shaft to the deepest part (Mardiani and Oktaviana 2020). *Aleurites moluccana* also contains several useful substances such as saponins, flavonoids, polyphenols and phytosterols which are efficacious to nourish hair and naturally blacken hair (Riwayani and Rosmiaty, 2021).

The next plant is *Cocos nucifera*, where coconut flesh is often used by the Amarasi people for hair and scalp care in the form of coconut milk and oil because coconut flesh is not only able to prevent hair loss but is also believed to make hair healthier, shiny and fresh. Based on the literature, the fat content in coconut milk starch can nourish and lubricate the hair strands so it is very good if applied to dry hair follicles can also strengthen hair follicles, help nourish, moisturize and improve hair condition, rejuvenate hair follicles thereby increasing hair growth. While the protein content contained in coconut milk starch can also strengthen hair, prevent damage, stimulate hair growth, and maintain and build new cells that are beneficial for hair (Karlina, et al., 2018). In addition, *Virgin Coconut Oil* (VCO) contains high levels of lauric acid with levels of 45-55% and picric acid as much as 7%. Both of these acids are saturated fatty acids that are easily metabolized and are easily metabolized and have antimicrobial properties so that they can trigger an increase in immunity and can reduce protein loss in damaged hair and healthy hair to give the appearance of healthy and not dry hair (Syah, 2005).

The leaves of the next plant that can be used pharmacologically for hair growth are *Polyscias scutellaria*. According to the Amarasi people, the leaves of the *Polyscias scutellaria* leaf contain a high enough foam so that it can clean the hair and scalp which can prevent hair loss and also nourish the hair. The content of the secondary metabolites of the *Polyscias Scutellaria* leaves plays a role in stimulating hair growth. Alkaloids are secondary metabolites that can increase hair growth and enlarge the hair shaft so



that the supply of nutrients increases. Flavonoid compounds as a group of phenolic compounds that are widely found in plant tissues can act as antioxidants. Free radicals are one of the causes of hair loss, so flavonoid compounds can prevent these free radicals and accelerate hair growth. Saponins can form a foam which means they can clean the skin of dirt, besides that they function to increase blood flow to hair follicles, if blood flow to hair follicles is reduced it will affect the hair follicles and cause hair loss (Samarinda and Indiyani, 2018).

*Allium cepa* is also a plant that is used as a plant that can overcome hair problems. *Allium cepa* besides being believed by the Amarasi community to relieve pain/headaches are also often used to prevent hair loss, nourish hair and treat dandruff. Based on the literature, onions can prevent hair loss because onions contain sulfur which can increase blood circulation and strengthen hair. In addition, it can induce hair growth by increasing blood circulation, resulting in good hair growth (Ibrahim and Elihami, 2020).

From the results of the study above, it can be seen that the plants and herbs used by the Amarasi people of Kupang Regency in the treatment of anti-dandruff and anti-baldness have proven their potential in overcoming hair problems. This plant is also easy to find and maintain by the local community so that its use becomes easier. The processing of these plants is also still traditional, including being burned, squeezed, mixed, grated, split and mashed. How to use these plants and herbs also varies, including washing, washing, massaging and smearing. The rules for using medicinal plants for anti-dandruff and anti-baldness are an average of 1-2 times a week.

## CONCLUSION

Based on the results of the research that has been done, it can be concluded that the Amarasi community has 8 single plants and 16 traditional plants and herbs that can be used as a treatment for scalp problems such as anti-dandruff, preventing hair loss and nourishing hair (anti-baldness). The parts of the plants used include roots fruit, seeds, leaves and sap/mucus with processing method including burning, pressing, mixing, frying, grating, splitting and grinding. Methods of use include shampooing, washing, massaging and rubbing with the rules of using plants on average 1-2 times a week. These plants based on research literacy studies conducted by previous researchers proved to have potential in the treatment of anti-dandruff and anti-baldness. For further research, it is also necessary to study medicinal chemistry to determine the structure of the plant's active compounds.

## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this article

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