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Ethnobotany of *Bedaka*: Face Brightening Concoction from Sahu Tribe, West Halmahera, Indonesia

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ABSTRACT

Sahu tribe at Lako Akediri village has a beauty treatment herbs concoction called *bedaka* that made from various plants species. Since the knowledge of making the herb is passed down by oral, it cannot be documented the whole local knowledge. Therefore, an investigation on ethnobotany of *bedaka* herb at Sub District Sahu, West Halmahera has been conducted. The aims of study are to inventory plant species tha used in *bedaka* herb; to elaborate the function of *bedaka* based on chemical content of used plants; and to describe conservation behaviour of community towards the used plants. Ethnobotanical data was collected by using participant observation and semi-structure interviews. The result showed that 22 species of plants from 19 families used in *bedaka* herbs. The most often used part is leaf (11 species) The using way of plant was by mixing the collisions of whole material, made it to sphere, and dried. The utilization of this concoction by diluted it with water. The functions of *bedaka* herbs are to prevent sunburn, to brighten and to soften skin face. The major resource of used plant is derived from cultivation (55%). It shows that conservation behaviour of community towards used plants has been highly enough applied. This study can be used as a reference in the development of natural-based facial beauty care products, such as skin care packages or face masks.

Keywords: *Bedaka*, ethnobotany, Sahu tribe, west Halmahera, beauty

INTRODUCTION

Since the beginning of civilization, humans have been very dependent on plants to meet their needs of life. Plants are used in almost all aspects of human life such as, sources of food, buildings, clothing, medicines, traditional rituals, and beauty treatments (Suryadarma, 2010; Setiawan *et al*., 2014). One form of plant utilization that is still carried out today by many community groups in Indonesia is for beauty treatments. The Javanese Tribe is quite well known for utilization of plants for beauty care. They use turmeric (*Curcuma domestica*) as a basic ingredient for body scrubs which have been widely used in various beauty products (Hartati and Balitro, 2013). The Tajio Tribe from Central Sulawesi, uses *lontibi* (*Lowsonia inermis*) as a nail polish to complement the beauty ritual on the night before the marriage contract (Rahyuni *et al*., 2013). The Sahu Tribe has a beauty concoction that used for face brightening called *bedaka*.

Talking about the Sahu Tribe, this tribe is a native Indonesian who occupied Halmahera Island. Most of them live in Jailolo City, Sahu sub-district, and East Sahu sub-district. The initial Sahu area was named Ji'o japung Malamo (large basin area). According to the story of

Sahu people, the name Sahu was given by the Sultanate of Ternate. The name was given because at that time an envoy from Sahu Sangaji, the person who led the Sahu area in the field of the Sultanate's government (past), the head of the sub-district (modern), met the Sultan just in time for Suhoor. Then the Sultan called them as Orang Sahu (The Sahu People) (Sari and Novianti, 2017). The traditional house of the Sahu tribe is called Sasadu. This fairly simple traditional house has become a symbol of togetherness among fellow Sahu tribes (Oktaviani, 2018).

Based on previous research, *bedaka* is a face mask used by women in West Halmahera to protect the skin from sunburn. This is understandable because the West Halmahera region is a small archipelago surrounded by the sea, so the air in that area tends to be hot and dry. *Bedaka concoction* is made from various types of plants that are processed traditionally. Knowledge of the composition of the plant species used was passed down orally from the elders (Wakhidah, 2015). This inheritance type has a weakness where none documentation of the knowledge that passed down. In addition, technological developments, modernization, and the rapid increase in education level decrease the young generation interest in ancestral culture. They consider it as a feature of underdeveloped societies. The modern world usually ignores the traditional knowledge of indigenous and local communities, treating it as mystic (Rai and Khawas, 2019). This can threaten the existence of local knowledge more specific about the use of plants in the local community. That's why the documentation of local knowledge is needed.

There are many important things that can be obtained from the documentation of local knowledge in the use of plants. First, it can avoid losing previous sources of information (Suryadarma, 2010). In this case information about local knowledge of *bedaka* – which know as a beauty concoction from the Sahu Tribe. Second, the documentation can be used as a database for further research materials in the future. In addition, documentation will help preserve biodiversity (Kandari *et al*., 2012). This study aims to document and to elaborate the diversity of plants in the mixture of *bedaka*, the used plants' parts, sources of plant acquisition, efficacy and how to use the concoction based on local knowledge, as well as the chemical content of plants based on literature studies. In addition, this study also explains the community concern in the used plants conservation.

METHODS

Study Area

The study was conducted in October 2014 at Lako Akediri Village, Sahu District, West Halmahera Regency. Since this village is inhabited by Sahu Tribe, this location was chosen. Lako Akediri Village is located at coordinates N 1°07'46.1" - E 127°25'45.3" with an area of 10 Ha (Figure 1). The distance from Lako Akediri Village to Sahu is 21 km and can be reached in ± 60 minutes. The village is a coastal area with an average rainfall of 15mm/month and a temperature of 32° - 35°C (Figures 2A and 2B). The total population of the village in 2014 was 344 people with a total of 85 families. The people of Lako Akediri village 98% came from the Sahu ethnicity, while the rest were immigrants, namely Buton, Bugis, and Sasak. The majority of the people of Lako Akediri Village live as farmers (75%), the rest work as laborers (6%), fishermen (7%), carpentry (6%), and civil servants (6%). Types of agricultural crops found in the village of Lako Akediri include sweet potatoes, corn, coconut, cloves, and nutmeg.

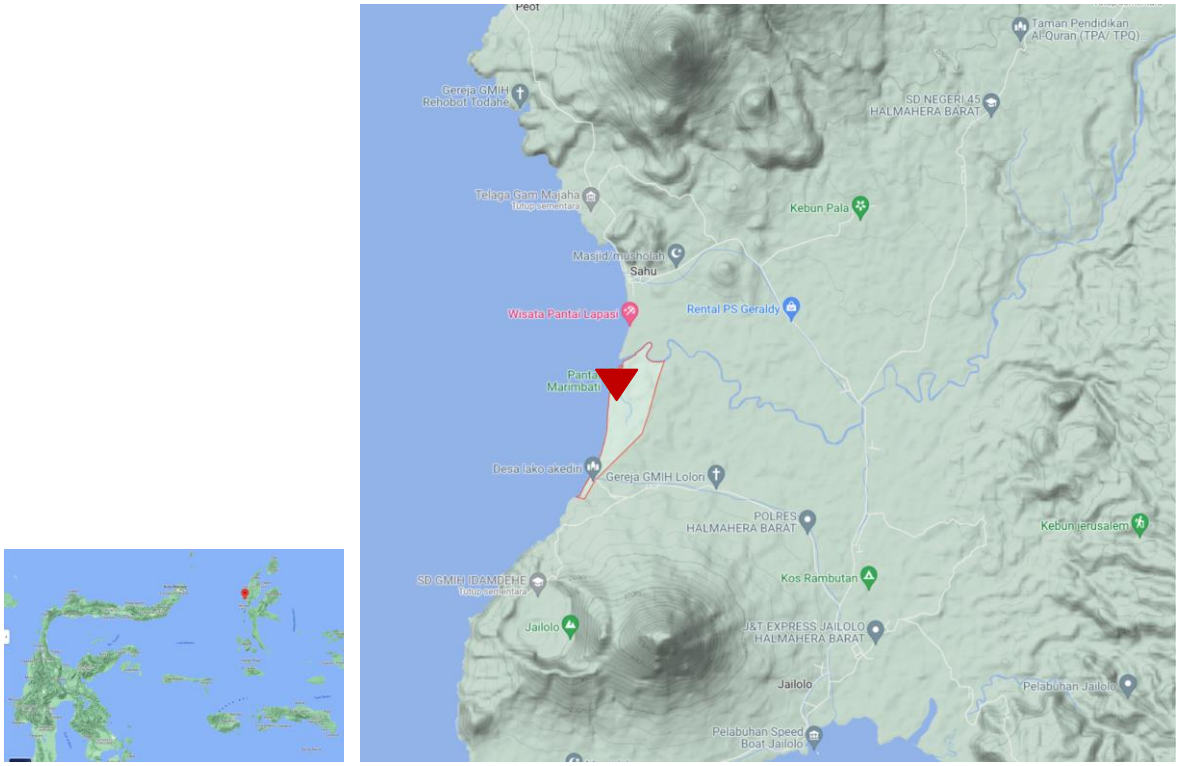

Figure 1. Research location which conducted at Lako Akediri Village (red triangle) in Western part of Halmahera Island

Data Collection

This ethnobotanical research used participant observation and semi-structured interviews. The participant observation method is a way of gathering information by living with local people and following their daily activities (Martin, 1995). The semi-structured interview method was carried out by informal interviews with local communities to obtain information on the plants used (Hoffman and Timothy, 2007). The interview was guided by a questionnaire compiled based on the data to be obtained, in the form of village description data, plant diversity, parts used, sources of plant acquisition, efficacy, and how to use *bedaka* herbs. We interviewed two type respondents, key respondents and general respondents. The key respondents are people who know more about the village and the herbal medicine such as the village head, traditional leader, and traditional healers. While the general respondents were local women as many as 30 people. General respondents were selected based on *bedaka* users who most of them were women. Respondents' ages were grouped into three, namely under 25 years, 26-40 years, and 40-60 years. Meanwhile, for the level of education, most of the respondents did not have higher education and their occupation was mostly a farmer. The general respondents were interviewed about the utilization of *bedaka*. The collection of plant specimens was carried out together with traditional healers. The collected plant specimens were made herbarium then identified in the laboratory.

Data Analysis

The collected data were analysed qualitatively. Qualitative analysis was carried out descriptively by elaborated the findings including plant species used as *bedaka* material, local name, used parts, the chemical content, and source of plant acquisition. The data is presented

in the form of tables, and then explained in detail. Meanwhile, the content of secondary metabolites found in most species is described based on a literature review.

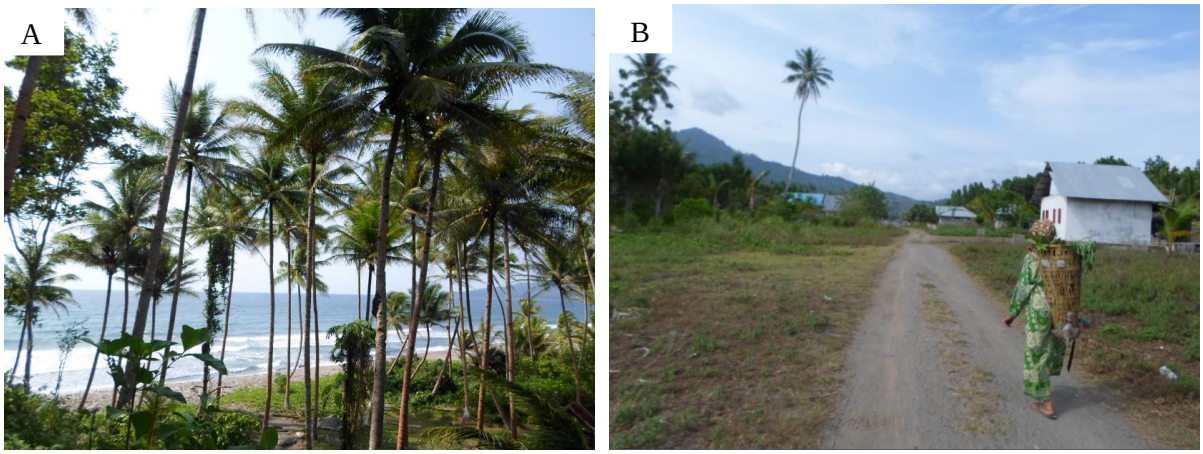

Figure 2. Landscape of Lako Akediri Village, Sahu District, West Halmahera; mixed garden dominated by coconut tree directly adjacent to the Maluku Sea (A); the settlement of local people (B)

RESULTS AND DISCUSSION

The tradition of using *bedaka* has become a hereditary habit in Lako Akediri. The concoction is only used among women as a beauty treatment. Every woman over the age of 13 years already knows the composition of *bedaka*. This is understandable because at that age women begin to give more attention to their body and face. Mostly the local women only know some used species in the composition of *bedaka*. For example kenanga (*Cananga odorata*), takie (*Cyperus squarrosus*), goro-goro (*Pogostemon cablin*), langsa (*Lansium parasiticum*), pondak (*Pandanus amaryllifolius*), padi (*Oryza sativa*), and lemon swanggi (*Citrus hystrix*). Meanwhile the complete composition is only known to the village shaman and her successors.

Diversity of Plants in *Bedaka* Concoction

Based on the information from local people, as many as 22 plant species belong to 19 families were used in *bedaka* concoction. Most of used part of plant are leaves (11 species). The used plant species contain various essential oil, for example kenanga (*Cananga odorata*) has chemical content such as geraniol, linalool, eugenol, iso-eugenol, metil eugenol; kuning (*Curcuma longa*) has chemical content curcumin, essential oil; and laka (*Impatiens balsamina*) contains pelargonidine, delphinidine, cyanidine, polifenol. Species name, local name, part used, chemical content based on ethical studies, and plant sources in Table 1.

Table 1. List of plant specis used in bedaka concoction by sahu tribe in lako akediri village, sahu district, west halmahera; included local name, used part, chemical content, and sources of plant acquisition

Name Species	Local Name	Used Part	Chemical content	Role of the plant	Source
Annonaceae					
Cananga odorata	Kenanga	flower, bark	geraniol, linalool, eugenol, iso-eugenol, metil eugenol	fragrance	Semi-wild
Apiaceae					
Coriandrum sativum	Surai	Leaves	saponin, flavonoid, tanin, antioksidan	antioxidant	Cultivated
Araliaceae					
Nothopanax scutellarium	Daun Mangkok	Leaves	peroksidase, fosfor, fat, vit. A, B1, C	antioxidant	Cultivated
Asteraceae					
Blumea balsamifera	Madikapu	leaves	essential oil, flavanol	fragrance	Semi-wild
Balsaminaceae					
Impatiens balsamina	Laka	flower	saponin, pelargonidine, delphinidine, cyanidine, polifenol	anthocyanin	Cultivated
Cyperaceae					
Cyperus squarrosus	Takie	root	essential oil, alkaloid, falvonoid, siperol, pinena, seskuiterpen	wound healer, antioxidant	Semi-wild
Euphorbiaceae					
Jatropha curcas	Balacai Putih	leaves	isoquersitrin, rutin, kaempferol, quercetin, ricinine, vit. C	antioxidant	Cultivated
Fabaceae					
Cynometra cauliflora	Mano-Mano	flower	saponin, flavonoid, tannin	antioxidant	Semi-wild
Sesbania grandiflora	Turi	leaves	isoflavonoid, saponin, polifenol, fitosterol, tokoferol	antimicrobial	Cultivated
Tamaridus indica	Asam Jawa	leaves	flavonoid, sitexin, isovitexin, orientin, 1-malic acid	antioxidant, antimicrobial	Semi-wild
Lamiaceae					
Pogostemon cablin	Goro-goro	leaves	patchouli oil, patchoulol, sesquiterpene hydrocarbons, 2-sesquiterpene alkaloids	fragrance	Cultivated
Liliaceae					
Allium sativum	Bawang Putih	tuber	protein, fat, calcium, fosfor, fe, and vitamin A, B1, and C	antioxidant	Cultivated

Magnoliaceae					
Michelia champaca	Cempaka	leaves	saponin, flavonoida, and tannin	anti-inflammation	Semi-wild
Meliaceae					
Lansium parasiticum	Langsa	bark	extract hidroetanol	anti-aging moisturizer	Semi-wild
Xylocarpus moluccensis	Lolesou	fruit	triterpenoid, steroid, saponin, and tannin	anti-hiperpigmentation	Wild
Myrtaceae					
Syzygium aqueum	Gora	leaves	essential oil, tannin, flavonoida	antioxidant	Cultivated
Oxalidaceae					
Averrhoa bilimbi	Belimbing Wuluh	flower	saponin, tannin, sulfur, format acid, peroxide	antioxidant, antibacterial	Semi-wild
Pandanaceae					
Pandanus amaryllifolius	Pondak	leaves	alkaloida, saponin, flavonoida, tannin, polyphenol	fragrance	Semi-wild
Poaceae					
Oryza sativa	Padi	seed	gamma oryzanol, asam linoleat, palmitat acid, polifenol, vitamin B_1, B_4	moisturizer	Cultivated
Rosaceae					
Rosa hybrida	Bunga Rosi	flower	essential oil	fragrance	Cultivated
Rutaceae					
Citrus hystrix	Lemon Swanggi	leaves	tannin, steroid triterpenoid, essential oil, saponin	fragrance	Cultivated
Zingiberaceae					
Curcuma longa	Kuning	rhizome	curcumin, essential oil	skin therapeutic	Cultivated

Bedaka **Concoction Preparation**

The *bedaka* concoction preparation was started by washing all used parts of plant. All materials were pounded until smooth then everything is mixed. The mixture was formed into flat balls and then dried (Figure 3). This mixture is very fragrant because made from aromatic plant species such as *Cananga odorata*, *Pogostemon cablin* and *Citrus hystrix*. When local women are going to use *bedaka*, the dried ball of *bedaka* is melted with water and then applied to the face. The steps for making the *bedaka* are passed down orally from elders to younger generations or woman shaman to their successors. The stages of *bedaka* preparation just follow the information from village elders without any scientific explanation.

Based on ethical studies, the purpose of pounding and mixing material is in order to mixed all used parts of plant perfectly. Thus, the active and inactive compounds in used plant are well mixed. The drying process aims to remove the water content in the mixture. The high

concentration of water in *bedaka* is possible to trigger enzymes to change the chemical compounds into other products that not good for its efficacy. As a result, the *bedaka* no longer has the desired effect or efficacy. In addition, the high water content will also be a good substrate for bacterial growth. This can contaminate the *bedaka* so it cannot be stored for a long time (Ma'mun, 2006). When it used, the powder will be re-melted with water so that the enzyme activity can be reactivated.

The shape of *bedaka* that made by Lako Akediri people is a biconcave disc similar to the shape of a red blood cell. It is possible to facilitate storage because the concave shape in the middle can expand the space of each *bedaka* ball. The *bedaka* is stored in a dry state in a closed container (Figure 3 C). Even though *bedaka* balls are dry, they are still fragrant.

Figure 3. (A) Plant material that used for *bedaka* preparation; (B, C) The dried *bedaka* balls

Efficacy and Use of Powdered Herbs

The area of Lako Akediri Village which is directly adjacent to the beach causes the air in the village dry and hot (32 - 35ºC). Therefore, the villagers use the mask from *bedaka* in their daily activities to protect the skin from burning (Figure 4). Besides, the *bedaka* is efficacious in brightening and softening the skin. Therefore, this concoction is also used for beauty treatments in traditional rituals, such as in ceremonies for welcoming girls to maturity (Figure 3D) and wedding ceremonies.

At the ceremony to welcome adulthood, the powder is used at the *kasih naik* stage. The ceremony is carried out when a girl gets her first menstruation. The *bedaka* that has been melted with water is applied to the girl's face after bathed by t women shaman who presided over the ceremony. The implementation of welcoming adulthood ceremony is approximately 3, 7, or 9 days. During that time, the *bedaka* is used by girls every morning and evening. After completed all the ceremony stage, the girl's face looks bright, clean, and her skin is softer (Wakhidah 2015). Meanwhile at the wedding ceremony, the *bedaka* is used by the bride a few days before entering the marriage contract. It aims to make the bride more beautiful during and after the wedding day.

Figure 4. The use of *bedaka* in the daily activities of the Lako Akediri villagers (A, B, C) and in the implementation of the welcoming ceremony for adulthood (D)

Studied scientifically revealed that the efficacy of *bedaka* on facial skin is obtained from the chemical content in the used plants. *Oryza sativa* seeds contain gamma oryzanol compounds, tocopherols, vitamin E, vitamins B1, B4, and wax. Gamma oryzanol has an antioxidant that act in UV protection by induced fat peroxidation. This bioactivity is important ingredient in sunscreen production that can be used on powder or body scrub (Anisfiani, 2014). The chemical content of other used plants and frequently cited by Lako Akediri Villagers will be explained in the following description.

The function of *Cananga odorata* in *bedaka* is as a fragrance. According to Desa *et al.*, (2008) oil extract from the flower has an aromatherapy effect that useful to reduce tension and pressure. *Pogostemon cablin* leaves are also used to add fragrance to *bedaka*. This plant produces patchouli oil, an important element in perfume production (Sahoo *et al.*, 2001). The study found that alkaloids, flavonoids, and essential oils are chemical content in tubers of *Cyperus squarrosus*. The essential oils content is able to heal wounds on the skin (Adi, 2008). The bark of *Lansium parasiticum* contains hydroethanol extract that act in delaying pigmentation and moisturizing the skin (Tilaar *et al*., 2008). Besides, *Curcuma longa* is the only species of Zingiberaceae used in powder. Based on Vaughn *et al*. (2016) this plant has an

active component called turmeric and curcumin. This component is commonly used medically to treat a variety of dermatologic diseases. Turmeric or curcumin content and supplements, both oral and topical, may provide therapeutic benefits for skin health.

Based on literature study of used plant composition in *bedaka*, this concoction is efficacious for brightening and moisturizing the skin, protecting the skin from UV, helping wound healing, preventing aging, and fragrance. Based on those benefits, this concoction can be developed in the local and national beauty industry. *Bedaka* can be produced on a factory scale, formulated with precise composition and sophisticated preservation. Then packaged in good packaging that meets the safety standards of product efficacy and attracts consumers. The product will become a local pride and be marketed not only to local people but also tourists who visiting West Halmahera.

Used Parts of Used Plant

The parts of plant that used in preparation of *bedaka* were leaves (11 species), bark (2 species), flowers (5 species), fruit, seeds, roots, tubers, and rhizomes (1 species each part). The data showed that the most widely used part is leaf. For easily accessible plants, the shaman use the leaves, for example *Pandanus amaryllifolius* and *Citrus hystrix*. Meanwhile for difficult accessible plants, the shaman use bark or flowers, such as *Lansium parasiticum* and *Cananga odorata*.

Based on ethical point of view, leaves are the most widely used part of the plant probably because of the activity of chemical compounds in leaves is more active than other plant parts (Shai *et al*., 2008). In addition from a conservation perspective, the utilization leaves will not interfere plant survival. That's a big possibility since leave is plant's organ that abundant in number and easy to renew (Setyowati, 2010). In opposite, the use of bark, roots, tubers, and rhizomes can threaten the survival of plants in nature, especially wild plants species (Zschocke *et al*., 2000). However, the Lako Akediri Villagers have cultivated the used plants, such as at their yards or gardens. Therefore, the existence of those used plant species in nature will be maintained.

The Conservation Concern of Lako Akediri Community

The sources of plant acquisition that used in *bedaka* composition are divided into three; wild (4%), semi-wild (41%), and cultivated (55%). The wild plants are plant species that grow on natural habitats (Pahan, 2006). Semi-wild plants are plant species that doesn't grow on their natural habitat but on man-made land, for example garden or mixed garden. Meanwhile, the cultivated plants are plant species that planted intentionally on land for certain purposes such as medicine, business purposes, beauty, or conservation (Hanum, 2009). The percentage of three sources of plant acquisition reflected the conservation concern of Lako Akediri villagers.

Based on the percentage of plant sources, the cultivation plants were the highest (55%) compared to semi-wild and wild plants. This result showed that the community's conservation concern towards the used plants in *bedaka* was already quite high. Thus, it can be concluded that the people of Lako Akediri have realized the importance of conserving the plants they use. As Waluyo (2000) said, humans do not intend to dominate nature since they are dependent on nature. The humans try to create a balance live in good relationship with nature. One of them is realized by preserving the species that have benefits for their lives.

CONCLUSIONS

The number of used plant species in the *bedaka* is 22 species belonging to 19 families. Almost the plant that used is fragrant because of the high essential oil content. The most widely used plant part is leaf (11 species) since the leaf is abundant compared to other plan's organ. In addition, the phytochemical content of plants is mostly found in leaves. Based on scientific studies of the used plant content, the *bedaka* is efficacy to preventing sunburn, brightening, and softening the skin.

The preparation of *bedaka* is by mixing all the ingredients that consist of 22 spescies of plant. After that the mixture is made a flat round shape, then drying it. This dried *bedaka* can be stored. When it's going to used, the dried *bedaka* is melted with water and then applied to the face. The highest source of plant acquisition came from cultivated plants (55%). This finding showed that many species used in *bedaka* were easily found around the settlement. Thus, the conservation concern of the local community towards the used plants is already good.

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REFERENCES

Adi, L. T. 2008. *Tanaman obat dan jus untuk mengatasi penyakit jantung, hipertensi, kolestrol, dan stroke*. Agromedia Pustaka, Jakarta.

Anisfiani, W., Asyiah, I. N., and Hariani, S. A. 2014. Etnobotani bahan kosmetik oleh masyarakat using di Kabupaten Banyuwangi sebagai bahan ajar populer. *Pancaran* 3(3): 52-62.

Attamimi, F. 1997. *Pengetahuan masyarakat suku Mooi tentang pemanfaatan sumber daya nabati di Dusun Maibo Desa Aimas Kabupaten Sorong*. Unpublished thesis. Fakultas Pertanian, Universitas Cenderawasih Manokwari.

Desa, N., S. Jamil. 2008. *1001 Misteri Alam - menyingkap rahasia khasiat sumber alam semula jadi kompilasi misteri alam*. Buku Prima SDN BHD, Selangor.

Hanum, C. 2009. *Ekologi tanaman*. USU Press, Medan.

Hartati, S. Y. 2013. Khasiat kunyit sebagai obat tradisional &manfaat lainnya. *Warta Penelitian dan Pengembangan Tanaman Industri* 19(2): 5-8.

Hoffman, B., and Timothy, G. 2007. Importance indices in Ethnobotany. *Ethnobotany Research and Applications* 5: 201-218.

Kandari, L. S., Phondani, P. C., Payal, K. C., Rao, K.S., and Maikhuri, R. K. 2012. Ethnobotanical study towards conservation of medicinal and aromatic plants in upper catchments of Dhauli Ganga in the Central Himalaya. *Journal of Mountain Science* 9: 286-296.

Ma'mun, S. 2006. Teknik pembuatan simplising dan ekstrak purwoceng. *Laporan Pelaksanaan Penelitian Tanaman Obat dan Aromatik*, Jakarta.

Martin, G. J. 1995. *Ethnobotany – A people and plants conservation manual*. Cambrige University Press, Cambridge.

Oktaviani, A. 2018. *Rumah Adat Sasadu*. https://http://situsbudaya.id/ accessed on 14 May 2022.

Pahan, I. 2006. *Kelapa sawit*. Penebar Swadaya, Medan.

Rahyuni, E., Yuniati, R., and Pitopang, R. 2013. Kajian etnobotani tumbuhan ritual Suku Tajio di Kasimbar, Kabupaten Parigi Moutong. *Jurnal of Natural Science* 2(2): 46-54.

Rai, P., and Khawas, V. 2019. Traditional knowledge system in disaster risk reduction: exploration, acknowledgement, and proposition. Jàmbá: *Journal of Disaster Risk Studies* 11(1):1-7.

Sahoo, S., Ramee, D. B., Rao, Y. R., Debata, B. K., and Misra, V. N. 2001. *Conservation and utilization of medicinal and aromatic plants*. Allied Publishers Ltd., Mumbai.

Sari, I. K., and Novianti, A. 2017. *Berkenalan dengan Suku Sahu, Penduduk Asli Jailolo di Halmahera Barat*. https://kumparan.com/ accessed on 14 May 2022.

Setiawan, H., and Maryatul, Q. 2014. Kajian etnobotani masyarakat adat suku moronene di Taman Nasional Rawa Aopa Watumohai. *Jurnal Penelitian Kehutanan Wallacea* 3(2): 107-117.

Setyowati, F. M. 2010. Etnofarmakologi dan pemakaian tanaman obat suku dayak tunjung di Kal-Tim. *Media Litbang Kesehatan* 10(3): 104-112.

Shai, L. J., McGraw, L. J., and Eloff, J. N. 2008. Extracts of the leaves and twigs of the threatenes tree *Curtisia dentata* (Cornaceae) are more actuve againts *Candida albicans* an other microorganisms than the stem bark extract. *South Africa Journal of Botany* 20: 1-4.

Suryadarma, I. G. P. 2010. Keanekaragaman tumbuhan bahan kebugaran dalam naskah lontar *rukmini tatwa* masyarakat Bali. *Biota* 15(2): 294-305.

Tilaar, M., Wih, W. L., Ranti, A. S., Wasitaatmadja, S. M., Suryaningsih, Junardy, F. D., and Maily. 2008. Review of *Lansium domesticum* Corrêa and its use in cosmetics. *Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas* 7(4): 183-189.

Vaughn, A. R., Branum, A., and Sivamani, R. K. 2016. Effects of turmeric (*Curcuma longa*) on skin health: A systematic review of the clinical evidence. *Phytotherapy Research* 30(8): 1243-1264.

Waluyo, E. B. 2000. Etnobotaani: Metode penelitian baru penggabungan antara konsep ilmu-ilmu sosial dan ilmu biologi. *Prosiding Seminar Nasional Etnobotani III*, Denpasar: 75-80.

Zschocke, S., Rabe, T., Taylor, J. L. S., Jager, A. K., and Van Staden, J. 2000. Plant part substitution – a way to conserve endangered medical plants. *Journal of Ethnopharmacology*. 71:281-292.

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