



Exploration of Medicinal Plants: Tinuktuk Concoction in Simalungunese, Indonesia

by Erond L. Damanik

THE
Character Building
UNIVERSITY

Submission date: 16-Apr-2023 01:00AM (UTC+0700)

Submission ID: 2065356431

File name: rnasional_Copernicus_an_Erond,_Exploration_of_medical_plants.pdf (651.93K)

Word count: 7935

Character count: 48820



Journal of Social and Political Sciences

19

Damanik, Erond L., Hasairin, Ashar., Baiduri, Ratih., Saragih, Marlya H., and Rajagukguk, Artha, V. (2021), Exploration of Medicinal Plants: *Tinuktuk* Concoction in Simalungunese, Indonesia. In: *Journal of Social and Political Sciences*, Vol.4, No.4, 24-37.

2

ISSN 2615-3718

DOI: 10.31014/aior.1991.04.04.313

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Journal of Social and Political Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Social and Political Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Social and Political Sciences, which include, but are not limited to, Anthropology, Government Studies, Political Sciences, Sociology, International Relations, Public Administration, History, Philosophy, Arts, Education, Linguistics, and Cultural Studies. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Social and Political Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Social and Political Sciences.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide



4 Exploration of Medicinal Plants: *Tinuktuk* Concoction in Simalungunese, Indonesia

Eron L. Damanik¹, Ashar Hasairin², Ratih Baiduri¹, Marlya H. Saragih³, Artha V. Rajagukguk³

5

¹ Department of Anthropology, Faculty of Social Sciences, Universitas Negeri Medan, Indonesia

² Department of Biology, Faculty of Math and Sciences, Universitas Negeri Medan, Indonesia

³ Student at Department of Anthropology, Faculty of Social Sciences, Universitas Negeri Medan, Indonesia.

6

Correspondence: Eron L. Damanik, Department of Anthropology, Faculty of Social Sciences, Universitas Negeri Medan, 20221, North Sumatra, Indonesia, Tel: 081361341334, E-mail: erondamanik@unimed.ac.id.

1 Abstract

Plant species have been applied in the traditional treatment of certain diseases since ancient history. The purpose of this study is to explore the efficacy of medicinal plants, specifically *tinuktuk*, in Simalungunese, North Sumatra, Indonesia. This effort shows the potentials of local knowledge in preparing herbal mixtures, based on geographical existence. The sample concoction was analyzed qualitatively for its health properties, using a pragmatic approach. Subsequent data were obtained from focus group discussions and field demonstrations to determine the plant types, processing mechanisms and efficacy. The results showed that the leaves, stems, fruits, seeds, tubers, and rhizomes of 18 herbal plant varieties were utilized, alongside the evaluation of 8 medicinal properties. Among the species, *Zingiberaceae*, *Arecaceae*, and *Euphorbiaceae* belonged to genera, while *Areacaceae*, *Poaceae*, *Rutaceae*, and *Zingiberaceae* families were predominantly applied. Therefore, the efficacy determination of *tinuktuk* concoction appears significant in terms of facilitating lactation during childbirth and subsequently eliminating the unclean blood, enhancing immunity, maintaining stamina and increasing the appetite. In summary, the sample is suitable as a herbal medicine and a product of local knowledge in the treating various ailments across generations.

Keywords: Simalungunese, *Tinuktuk*, Healing, Spice

1. Introduction

This research was motivated by the local use of ethnobotanical spices to prepare *tinuktuk* concoction as a herbal treatment alternative in Simalungunese, North Sumatra province, Indonesia. Based on empirical experience, certain ethnomedicine and ethnopharmacology concerns were considered, including the available raw materials dependent on the geographical environment, plant parts, specie compositions, mechanisms and processing, as well as the consumption and indications of medicinal efficacy. Ethnobotanical studies, particularly on *tinuktuk*, appears very limited, although the present article is perceived as the most comprehensive and very preliminary.

In addition to process documentation, the findings also contribute immensely to modern healthcare systems, in terms of exploring local knowledge.

The present study was also influenced by 7 realities, including inadequate exploration and documentation, nutritious spice sources, absence of testing in the laboratory or by the Food and Drug Administration, non-registration with the Director General of Culture as well as the Indonesia's Ministry of Education, Culture, Research and Technology as a national intangible heritage (*Warisan Budaya Tak Benda-Nasional (WBTB-Nasional)*) occurrence of management degradation among younger generations, efforts in obtaining derivative products for micro and small business sectors and the ethnobotanical conservation of medicinal herbs. However, the first and second points, documentation of spice ingredients, manufacturing mechanisms, and indications of initial efficacy were the primary focus. These concepts serve as the first step in complementing the last five outcomes. For the record, *tinuktuk* is an intangible cultural heritage in Simalungun that requires international registration and protection (UNESCO, 2003).

According to World Health Organization (WHO), 60-80% of the global population currently rely on medicinal plants for disease treatment (Joy, Thomas, Mathew & Skaria, 1998; Duke, Bogenschutz-Godwin, duCellier & Duke, 2002; Peter, 2001; Harrison & Waterlow, 2009; Whyte, van derGeest & Hardon, 2003). Indonesia's Ministry of Health also reported that 80% of its population depends on traditional medicines (Silalahi, Supriatna, Walujo & Nisyawati, 2015). In Simalungun region, 239 medical plant species, comprising 170 genera and 70 families, showed the ability to treat 18 natural and 2 supernatural diseases (Silalahi, Supriatna, Walujo & Nisyawati, 2015), in addition to enhancing stamina, immunity, lactation, and recovery during the puerperium.

Similarly, five main points were considered very useful to the present study, in terms of species exploration and documentation, efficacy based on its origin and empirical experience, institutionalization and protection, commodification, technology and marketing as well as plant conservation. Based on experimental outcomes, *tinuktuk* is known to demonstrate substantial therapeutic properties, with no side effects despite the absence of laboratory testing. This study also provides the preliminary basis for exploring local knowledge in curative applications (Martin, 1995). The objectives offer an effective substitute in restoring raw materials, properties, and traditional healing methods for modern medical science. Therefore, the present research bridges the gap between traditional and modern knowledge in exploring herbal plants (Nawaningrum, Widodo, Suparta & Holil, 2004) as well as conservation for advanced medical science (Suryadarma, 2010).

Ethnobotanical studies are known to contribute extensively to the fulfillment of human nutrition (Martin, 1995; Macbeth & Mac Clancy, 2006), in the form of vegetables, fruits, staples and complementary foods, beverages, as well as spices (Sujarwo & Cuneva, 2016; Silalahi, Nisyawati & Anggraeni, 2018). There are also other aspects closely related to culture, including technology, social institutions and religion. As a consequence, nutrition does not show any significance unless perceived in cultural or social interactions (Nurti, 2017; Richards, 2013; Bates, 1984).

Additionally, nutrition is obtained from spices and ethnobotanically adapted to the geographical environment, particularly as related to ethnomedicine and ethnopharmacology. In an ancient ethnographic study, traditional health institutions were viewed as embryos of modern healing (Rivers, 1924; Clements, 1932). Ethnobotany contains beliefs and practices specific to plants with implicit medicinal properties, according to the laws of cause and effect (Wellin, 1977). For instance, chenopodiumseeds are consumed in India and Mexico to prevent worms (Foster & Anderson, 2016). Further analysis on ethnobotany provides the scope of ethnomedicine, known as a socio-cultural framework about disease and healing (Martin, 1995).

In anthropology, ethnomedicine is described as a biocultural discipline oriented towards biological and cultural aspects of human behavior, in terms of health and disease (Foster & Anderson, 1978; Colson & Selby, 1974), or the specific consequences of lifestyle (Fiennes, 1964). Ethnobotany also presents human perceptions according to individual culture in comprehending the surrounding plants (Harrison & Waterlow, 2009). Proper plant understanding correlates with the study of medicine, including social efficacy, experience, control, skepticism,

cultural politics, health commodification and technological fascination, such as image and value marketing (Whyte, van derGeest & Hardon, 2003; Harrison & Waterlow, 2009).

Ethnobotanical products such as spice are very effective for stamina, emerging as a basic diet response to diseases. The disorders do not only appear physiological or under environmental influences, but are also personal (Foster & Anderson, 2016). Special methods and herbs are necessary for treatment in both contexts. However, it is important to comprehend that past and present health-related behaviors that appear adaptive, in order to achieve endurance and improve health (Foster & Anderson, 2016). This paradigm provides an in-depth overview of the structure and dynamics of healthy behavior, rational response and human cognitive orientation to diseases.

Health institutions emphasize on common elements underlying the overall medical aspects dependent on culture (Foster & Anderson, 2016). The objectives of the discovery of plants as food components include new diet alternatives, conservation, genetic diversity, preservation of traditional ingredients, healthy diet preferences, local spices, and bioprospection (Heinrich, Leonti, Nebel & Peschel, 2005; Pieroni, Nebel, Santoro & Heinrich, 2005; Leonti, Nebel, Rivera & Henrich, 2006). These intentions reflect the cultural context necessary for adequate sustainability (Pieroni, 2001; Sujarwo & Cuneva, 2016).

Spices are biological resources that play an important role in human life as aromatic plant parts with limited use for seasoning, flavor enhancers, fragrances and preservatives. The stems, stalks, leaves, bark, tubers, rhizomes, roots, seeds, fruits and flowers are also utilized (Duke, Bogenschutz-Godwin, duCellier & Duke, 2002; Ebadi, 2006; Csekeetal, 2006; Peter, 2001). These plants contain phytochemical compounds generated from metabolic processes (De Guzman & Siemonsma, 1999).

Spices occur as fresh and dry plants that are integrated into food, cosmetic and medical materials (Soediarto, Guhardja & Sudramadi, 1978). In ethnobotanical studies, a correlation exists between humans and plants, data collection and documentation of traditional knowledge in supporting life, as food, medicine, cosmetics, ceremonies, rituals and dyes (Robi, Kartikawati & Muflihati, 2019). This concept also includes the entire monocotyle and dicotyle correlated with human sustainability and also reflects the relevance of local plant knowledge, based on geographical environment (Amrul, Susilo & Huda, 2019). However, each source demonstrates distinct varieties that significantly impact ethnomedicine and ethnopharmacology (Silalahi, Purba & Mustaqim, 2018; 2019).

The processing of medicinal spices based on empirical experience produces herbal medications. For instance, over 30,000 herbs have been applied for preventive and curative purposes in Indonesia (Braziaet al, 2020). As the product undergo laboratory testing, clinical trial or BPOM, it becomes a standardized herbal or phytopharmaceutical commodity (Alexiades, 1996; Hakim, 2015:1). In Simalungun, *Torbangun (Coleus amboinicus Lour)* containing lactogen that plays a significant role in increasing milk production during parturition or breastfeeding, has been registered as a phytopharmaceutical product at Indonesia's Ministry of Health (Damanik, 2008; 2014; Iwansyah, Damanik, Kustiyah & Hanafi, 2017).

Ethnobotany studies also appear relatively limited in Simalungun, although a recent study confirmed the existence of 239 species, comprising 170 genera and 70 families applied in the treatment of 18 natural and 2 supernatural diseases (Silalahi, Supriatna, Walujo & Nisyawati, 2015). Additionally, the leaf portions a major plant segment is extensively utilized in a total of 119 species. However, as a basis for future drug development, traditional concoctions, including other medicinal herbals require biological evaluation (Purba, Nisyawati & Silalahi, 2016; Silalahi & Nisyawati, 2017).

Hasairin (2010) showed the variety and uniqueness of traditional food in Simalungunese, including *Nitak putih*, *nitak merah*, *dayokbinatur*, and *sambal tawar*. Four alternatives employed spices as raw materials, seasonings, flavorings, dyes, and preservatives. Another study focused on the social capital necessary in *tinuktuk* preparation (Saragih, 2020). Furthermore, the manufacturing techniques involved collection, cleaning, slicing, roasting,

grinding and mixing of the samples. A range of 5-7 workers are needed in processing 3-4 kg of *tinuktuk* and are mostly relatives without salary, but are allotted products at equal proportions. Furthermore, social capital encompasses cooperation, collaboration, trust, networks, and kinship as well as brotherhood.

Further studies are expected to link process complexity, spice scarcity, and the absence of standard compositions threatening to impact culinary lexicon. Younger generations, particularly between 20-30 years are unaware of the *tinuktuk* spice, processing mechanism and rarely consume the product. These entire phenomena also adversely contribute to the risk of culinary lexicon (Batsu, 2017), mainly due to 5 crucial points, termed science and technology development, catering, instant spices, fast foods and restaurants, as well as the absence of inheritance. However, other investigations compared *tinuktuk* during the puerperium and breastfeeding stage (Saragih, 2016). The trend of processing in both intervals demonstrates an impact on general knowledge, where consumption is only suitable for pregnant women. Furthermore, the concoction contains compounds to facilitate lactation, wound recovery, removal of dirty blood and stamina renewal after childbirth.

Sidauruk (2019) further discussed the added value of spices for business feasibility. The value of *tinuktuk* concoction on a home industry scale (IRT) under four months of production was approximately IDR 27,468,933, while the higher added-value ratio was 64.39%, greater than the average 50%. This calculation indicates that manual production obtained a significant economic rating and business feasibility. Finally, a recent study examined *tinuktuk* concoction comprehensively, based on documentation, processing mechanisms, efficacy indications and developmental potentials (Damanik, Hasairin, Baiduri, Saragih & Rajagukguk, 2021). In addition, the article was the essence of a published book with ISBN. No other reference was known to discuss *tinuktuk* in Simalungun, apart from the research.

Recent studies on Simalungun by Damanik served as the basis of kinship in extended and conjugal families (2021a), pentagonal kinship-based dispute resolution (2021b), confirming kinship at marriage ceremonies (2020), social history (2018), social dynamics and ethnic identity (2017a), *tortor* or dance (2017b), traditional clothing (2019; 2016a), passage rites (2016b), work and life orientation (2016c), and social revolution (2015). This article was included in the study of cultural engineering that contributes to welfare in determining the main *tinuktuk* concepts (Damanik, 2018).

2. Method

⁶ This study was conducted qualitatively (Creswell, 2007), using an ethnographic approach (Spradly, 1997) and the data validity was obtained by empirical experience (Creswell, 2014). Ethnobotany (Martin, 1995) and health anthropology (Foster & Anderson, 2016) paradigms were employed with the purpose of determining the ethnobotanical spices influencing ethnomedicine and ethnopharmacology based on hereditary.

The research was performed in 5 months between April-September 2021 in Simalungun regency with *tinuktuk* spices as the object, including raw materials, processing mechanisms, equipment, supplies, and health benefits. In addition, the subjects were parents above 55 years, with wider experience in *tinuktuk* preparation, in the form of spice types, processing mechanisms, composition, compounding, and drug indication.

The data collection involved four mechanisms, termed periodic field visits in search of objects and subjects as well as short interviews, in-depth interviews with key subjects at individual residences, focus group discussions (FGD) involving 18 participants on July 15, 2021 in Bayutongah village, and solid demonstration of *tinuktuk* concoction processing, including raw materials, cleaning, slicing, roasting, refining and compounding on July 16, 2021. The resulting data were written and recorded, while the processing was documented using photos and videos.

The names of spices according to the local language and the benefits were recorded in a logbook. Furthermore, each variety was organized depending on the taxonomy and efficacy, compared to the medicinal indications from ethnobotanical analysis. Subsequently, the main compounds, including health benefits were compared to

the online results, while the overall data were manually reviewed, tabulated and categorized. This information was further analyzed qualitatively and quantitatively to determine the conclusions, novelty, practical as well as theoretical contributions and follow-ups. Qualitative assessment was used to classify plants, as an indication of initial efficacy³ processing process, and material type. Meanwhile, the quantitative approach was aimed at evaluating the index of cultural significance (ICS) based on the formula by Turner (1988) and the use of values (UVs) for each species according to Prance, Balle, Boom, and Carneiro (1987).

3. Results

Figure 1 is a representation of Simalungun regency stretching southwest from an altitude of 1,400 above sea level (masl) to 80 masl east. The geographical location occurs at 2° 36"-3° 18 North Latitude and 98° 32'-99°-35 East Longitude, with a total area of 438,660 ha, comprising 138,838.46 ha of forest, while the remaining encompass settlements, fields, plantations, and industries. Also, the region is described as fertile, tropical, and highly humid on an annual basis, with the upper portion reserved for horticultural cultivation, including potato (*Solanum tuberosum*), cabbage (*Brassica oleraceavar. capitata*), carrots (*Daucus carota sub sp. sativus*), red chili (*Capsicum annum L*), cayenne pepper (*Capsicum frutescens*), broccoli (*Brassica oleraceavar. italica*), tomato (*Solanum lycopersicum*), and others developed by Botje in 1915. Conversely, the lower segment features the lowland suitable for tea plantations (*Camellia sinensis*), oil palm (*Elaeis*), rubber (*Hevea brasiliensis*), and cocoa (*Theobroma cacao L*), developed since colonialism in 1907. Evidently, dry and wet agriculture are practiced in the upper and lower Simalungun regions, respectively.

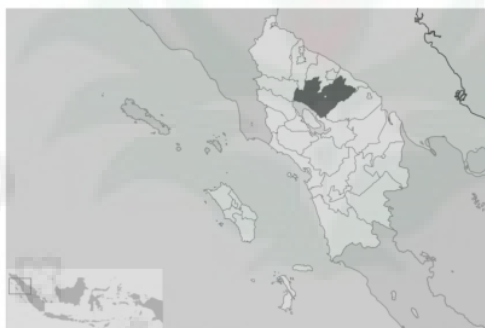


Figure 1: Map of Simalungun Regency, North Sumatra Province, Indonesia

Source: Central Bureau of Statistics (Central Bureau of Statistics [BPS], 2021)

In addition to influencing soil management and social structure (Damanik, 2020; 2021b), the variations in geographical location also impact significantly on ethnobotanical types with medicinal properties for *tinuktuk* preparation. For instance, *kincung* (*Etlingeraso. 1*) and musk orange (*Citrus mitis*) appear more popular at the upper and lower areas, respectively. The potential use of both spices is to generate an acidic effect, although only one item is preferred. Furthermore, *bungle* (*Zingiber purpureum*) or *laos* (*Alpina sp.1*) are occasionally replaced with *temulawak* (*Curcuma xanthorrhiza*) while salt (*sodium chloride*) and rice (*Oryza Sativa*) are not commonly applied.

Despite the use of separate spices, the taste, color, aroma, and particularly the medicinal properties, are not very distinct. The *tinuktuk* mixture currently occurs in various areas, including Bayutongah, Pamatangraya, Dolongsilou, Nagoridolog, and Bandarmariah. This research reported 8 health benefits of the concoction, in form of the increase of endurance and stamina, protection against colds, provision of body warmth, cleaning of dirty blood after childbirth and menstruation, milk production during puerperium or lactation, as well as increment in appetite, improvement in blood circulation, and the boost in body fitness. In particular, the sample was categorized into two groups, including support in stamina, immunity, and body fitness (*tinuktuk sambaltawar*), as well as assistance in breastfeeding mothers to recover and treat postpartum wounds, immunity and facilitate lactation (*tinuktuk paranggetek*).

Tinuktuk etymologically originates from the basic word “*tuktuk*,” indicating mashed and is based on the manufacturing process, involving the pounding of various medicinal plants. The sample is also called “*giling*” from the word “*giling*,” meaning to grind. Also, both forms incorporate the use of a mortar and pestle, often referred to as “*siralada*” from “*sira*” (*sodium chloride*), and “*lada*” (*Piper nigrum*), respectively, depending on the resulting taste and aroma. Currently, *tinuktuk* exists in several regions, including Bayutongah, Pamatangraya, Dologsilou, Purba, and Nagoridolog, but rarely occur in other areas. Furthermore, the concoction is commonly traded in traditional markets, including Pamatangraya, Tigarunggu, Saribudolog, Haranggaol, Parapat, Siantar, Tanohjawa, and Saranpadang.

In summary, 117 and 11 spice species were used to produce *tinuktuk sambaltawar* and *tinuktuk paranggietek*, respectively. Table 1 represents the raw materials, comprising 15 mandatory, 3 optional and 2 additional ingredients.

Table 1:Ingredients and spices

Material category	Indonesian name	Local name	Scientific name	Part used
Main materials	Jahe Merah	PogeiSigerger	<i>Zingiber officinale</i>	Rhizome
	Kencur	Hasihor	<i>Kaempferia galangga L</i>	Rhizome
	Lempuyang	Lappuyang	<i>Zingiber americanus</i>	Rhizome
	Temulawak	Tomulawak	<i>Curcuma xanthorrhiza</i>	Rhizome
	Bawang Putih	Bawang silopak	<i>Allium sativum</i>	Tuber
	Bawang Merah	Bawang sigerger	<i>Allium cepa L</i>	Tuber
	Lada Hitam	Tuba	<i>Piper nigrum</i>	Seed
	Serai	Sasanggei	<i>Cymbopogon citratus</i>	Stem
	Lengkuas	Halaos	<i>Alpinia galangga</i>	Rhizome
	Kemiri	Gambiri	<i>Aleurites moluccana</i>	Seed
	Kunyit	Huning	<i>Curcuma demostica</i>	Rhizome
	Andaliman	Andaliman	<i>Zanthoylum acanthopodium</i>	fruit
	Lokio/Kucaai	Hosaya	<i>Allium chinense</i>	Tuber
	Kincung	Sihala	<i>Etilingera Sp. 1</i>	Rhizome, stem
	Wijen Hitam	Longa Sibirong	<i>Sesamun indicum</i>	Seed
Optional materials	Jeruk Kesturi	Uttei Jungga	<i>Citrus mitis</i>	Root, fruit
	Bungel	Bangel	<i>Zingiber pupureum</i>	Rhizome
	Laos	Laja	<i>Alpinia sp.1</i>	Rhizome
Additional materials	Garam	Sira	<i>Natrium chloride</i>	Granules
	Beras	Boras Sinanggar	<i>Oriza sativa</i>	seed

Source: Field data, 2021

Table 1 show that the genera species include *Zingiberaceae*, *Arecaceae*, and *Euphorbiaceae*, while *Arecaceae*, *Poaceae*, *Rutaceae*, and *Zingiberaceae* were mostly applied. The Simalungunes recognized 239 species, comprising 170 genera and 70 families (Silalahi, Supriatna, Walujo & Nisyawati, 2015). Also, the ethnobotanical types were composed of 230 spermatophyta, 8 pteridophytes, and 11ichen while the main families encompassed 20, 16, 13, and 12 species of *Arecaceae*, *Poaceae*, *Rutaceae*, and *Zingiberaceae*, respectively. The largest genera consisted of 13, 12, 11 and 10 species of *Arecaceae*, *Euphorbiaceae*, *Poaceae* as well as *Fabaceae* and *Asteraceae*, correspondingly.

Furthermore, 72, 64 and 41 varieties contained compounds capable of curing digestive disorders, fever and fractures. The raw materials were cultivated in Simalungun, and were further applied in the treatment of 18 natural and 2 supernatural diseases. These 18 natural ailments include hypertension, cough, asthma, 3 rrrhea, gastro intestinal disorders, stomach ache, fractures, rheumatism, itching, ulcer, kidney dysfunctions, diabetes mellitus, aphrodisiac injury, fever, eye infection, thrush, and toothache. Meanwhile, the 2 supernatural diseases

are *busu*³ (liver disease) and *logo-logo* (malnutrition). More specifically, the spice type in preparing *tinuktuk* obtained index of cultural significance (ICS) and use value (UVs), as recorded in Table 2.

Table 2: ICS and UVs and the content of *tinuktuk* concoctions

Scientificname	ICS	UVs	Active compound	Use*
<i>Zingiber officinale</i>	112,0	2,6	Antioxidant phenol, gingerol, paradol, and shogaol	Gas, Sto, Inj, Fev, Aph, Tt, Tp
<i>Kaempferia galangga L</i>	90,0	3,2	Etip P-methoxycinnamate	Cou, Ash, Gas, Sto, Rhe, Aph
<i>Zingiber americanus</i>	18,0	2,2	Antioxidant polyphenols, flavonoids, calcium, and vitamin C.	Dia, Gas, Tt
<i>Curcuma xanthorrhiza</i>	108,0	3,6	Curcuminoids and essential oils.	Ash, Sto, DM, Fev, Inj, Tt.
<i>Allium sativum</i>	90,0	2,4	Protein, fat, carbohydrates, fiber, calcium, magnesium, and phosphorus.	Hyp, Dia, Bus Tt
<i>Allium cepa L</i>	96,0	3,6	Carbohydrates, proteins, fiber, calcium, magnesium, and potassium.	Cou, Dia, Gas, Rhe, Ulc, Inj, Fev
<i>Piper nigrum</i>	60,0	2,0	Alkaloids and essential oils	Rhe, Fev, Bus, tt, Tp
<i>Cymbopogon citratus</i>	24,0	0,8	Citronellal and geraniol	Alg, Tt, Tp
<i>Alpinia galangga</i>	56,0	2,8	Galaning, quercetin, kaempferol, and vitamins A, B1 and B2.	Fev, Itc, Dia, Gas, Rhe, Tt, Tp
<i>Aleurites moluccana</i>	129,0	3,2	Glycerides, linoleic, palmitic, stearic, myristic, fattyacids, and vitamin B1	Dia, Gas, Sto, Kid, Fev, Tt
<i>Curcuma demostica</i>	142,0	2,6	Curcumin and essential oil	Dia, Gas, Sto, Inj, Fev, Eye, Alg, Tt, Tp.
<i>Zanthoxylum acanthopodium</i>	60,0	2,0	polyphenolss, monoterpenes, and sesquiterpenes	Cou, Tt
<i>Allium chinense</i>	90,0	4,8	vitamin C, beta carotene, and minerals such as calcium, phosphorus and potassium	Hyp, Dia, Gas, Itc, Ulc, DM, Fev, Tt
<i>Etlingera sp.1</i>	30,0	4,0	Alkaloids, steroids, and essential oils.	Ash, Tt
<i>Sesamun indicum</i>	45,0	1,8	Omega-6 fatty acids, calcium, iron, fat, magnesium, fiber, and phosphorus,	DM
<i>Citrus mitis</i>	9,0	1,6	Protein, fat carbohydrates, fiber, calcium, phosphorus, iron, sodium, potassium, beta-carotene, thiamin, riboflavin, and vitamin C	Fra, Fev, Bus, T
<i>Zingiber purpureum</i>	114,0	2,6	Essential oils, starch, tannin, saponins, and glycosides	Dia, Gas, Tt
<i>Alpinia sp.1</i>	112,0	2,6	Essential oil	Dia, Gas, Tt
<i>Natrium Chloride</i>			crystalline mineral	
<i>Oriza sativa</i>			protein, fat, fiber, and carbohydrates	

Source: Silalahi, Supriatna, Walujo & Nisyawati (2015)

*³ote: Alg (*Alogo-alogo*), Aph (Aphrodisiac), Ash (Asthma), Bus (*Busung*), Cou (Cough), Dia (Diarrhea), DM (Diabetes mellitus), Eye (Eyeinfection), Fev (Fever), Fra (Bone fractures), Gas (Gastrointestinal disorders), Hyp (Hypertension), Inj (Injury), Itc (Itchy), Kid (Kidney disease), Rhe (Rheumatism), Sto (Stomachache), Thr (Thrush), Too (Toothache), (Tp) *Tinuktuk parangietek*, Tt (*Tinuktuk tawar*), Ulc (Ulcer).

According to Silalahi, Supriatna, Walujo & Nisyawati (2015) and Pie³ni (2001), ICS refers to plant cultural value and based on the uses, is divided into five categories, termed >200 (very high), 100-199 (high), 20-99 (moderate), 5-19 (low), and (5) <5 (very low). A variation range of 1.5-142.0 was observed in Simalungun medicinal plants, with the highest occurrence related to turmeric or *huning* (*Curcuma domestica*), indicating

multiple use, while samples with low values were less applied. ¹ Plants with moderate ICS value were garlic (*Allium sativum*) and higher ICS score was subsequently obtained for Simalungun, compared to Malays (Susiarti, Purwanto & Walujo, 2005), but lower than the Karonese (Silalahi, Supriatna, Walujo & Nisyawati, 2013). The use of medicinal plants is strongly influenced by culture and spiritual beliefs (Cocks & Dold, 2006; Cocks, 2006), as well as the geographical environment (Pieroni, 2001).

³ Furthermore, UVs aims to determine the use value (UV) of medicinal plants depending on the applied types and informant experience. Age is also a major influencing factor, with range of 30-50 years showing a lower score, compared to samples above 50 years (Silalahi, Supriatna, Walujo & Nisyawati, 2015). For instance, shallots (*Allium cepa*) achieved values of 2.2 and 3.6 in the young and older groups, respectively. This difference in UVs points to the knowledge degradation in younger generations, in terms of medicinal plant types and concoction ingredients. The degradation is impacted by four primary factors, including the development of robust health systems and medical technology, tendency of the oral tradition to transfer *tinuktuk* knowledge to younger generations, variations in cultural values, and the perception of traditional medicine among the younger group.

This phenomenon, however, does not only occur ¹⁷ Simalungun but across the world. Based on scientific advancement, younger generations tend to neglect local knowledge of medicinal plants. As a consequence, the challenges of *tinuktuk* production in future conservation potentially involve three crucial points, termed the process complexity and the duration of raw material preparation, absence of standard references on raw material composition, and efficacy of the method. These factors are exacerbated by the availability of modern medicines and perceptions of traditional alternatives.

4. Discussion

The processing of *tinuktuk* requires between 4-7 workers probably composed of relatives or neighbors. Spices are typically collected from fields, forests, or purchased from the market, while bucket, knife, cauldron, mortar, pestle and spoon are the major equipment. Currently, traditional patterns are also applied, without the use of machines. Roasting and pounding exhibit the most extensive duration, although gathering, cleaning, slicing, roasting, pounding or grinding and mixing formed the primary steps. These efforts are performed manually to produce a thick liquid, yellowish, distinctive aroma and spicy taste.

In certain Simalungun regions, the raw spices are employed, such as in Nagoridolog and Siloukahean, but are initially roasted before applying in Pamatangraya, Purba, and Silimahuta. The two mechanisms generate different flavors and expiration dates, while the raw materials with relatively high water contents attain fairly short expirations of usually 6 months. Conversely, the roasting of samples, in addition to reducing water content, offers a distinctive aroma and relatively extensive expiration, mostly beyond a year.

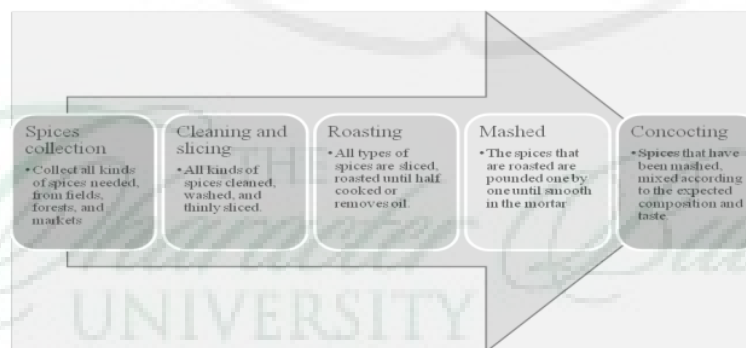


Figure 2: Mechanism of processing *tinuktuk* concoction

The manufacturing process does not involve any application of dyes or preservatives, except salt. However, the yellowish or brownish-black color in the ingredients is due to the presence of candlenut (*Aleurites moluccana*),

turmeric (*Curcuma demostica*), or gingers (*Zingiberaceae*) that are the dominant constituents. Roasted rice is added to smooth dark colors to neutralize the excessive salt and acid effects, while the main preservatives originate from *Andaliman* (*Zanthoxylum acanthopodium*). The *tinuktuk* concoction, commonly placed and stored in bottles or bamboo, is tightly closed against sunlight. Furthermore, plastic containers are not recommended because of the tendency to alter the taste or speed up the expiration date.

Despite the non-existing standardization, empirical experience serves as a guide in obtaining quality *tinuktuk*. Table 3 highlights the raw material composition in generating 2 kg of *tinuktuk*, based on the resulting information from focus group discussions. This comparison shows that the sample constituents are possibly calculated as the basis for *tinuktuk* processing for the general public in Simalungun.

Table 3: Ingredients for 2 kg of *tinuktuk* concoction

Ingredients	Part used	Dosage (gram)
<i>Zingiber officinale</i>	Rhizome	1000
<i>Kaempferia galangga L</i>	Rhizome	500
<i>Zingiber americanus</i>	Rhizome	100
<i>Curcuma xanthorrhiza</i>	Rhizome	100
<i>Allium sativum</i>	Tuber	500
<i>Allium cepa L</i>	Tuber	1000
<i>Piper nigrum</i>	Seed	250
<i>Cymbopogon citratus</i>	Stem	100
<i>Alpinia galangga</i>	Rhizome	50
<i>Aleurites moluccana</i>	Seed	100
<i>Curcuma demostica</i>	Rhizome	250
<i>Zanthoxylum acanthopodium</i>	fruit	150
<i>Allium chinense</i>	Tuber	100
<i>Etlingera sp.1</i>	Rhizome, stem	100
<i>Sesamun indicum</i>	Seed	100
<i>Citrus mitis</i>	Root, fruit	100
<i>Zingiber purpureum</i>	Rhizome	100
<i>Alpina sp.1</i>	Rhizome	150
<i>Natrium chloride</i>	Granules	100
<i>Oriza sativa</i>	Seed	1000

Source: Field data, 2021

Table 3 shows the use of red ginger (*Zingiber officinale*), shallot (*Allium cepa L*), *kencur* (*Kaempferia galangga L*), turmeric (*Curcuma demostica*), black pepper (*Piper ningrun*), and *andaliman* (*Zanthoxylum acanthopodium*) in different proportions. Each material was roasted and pounded successively using mortar and pestle, followed by a thorough mixed and re-mashing to obtain a uniform distribution. In particular areas mixing are achieved in a bucket with a spoon, but the recommendation for this study involved pounding with mortar to accommodate only 1-1.5 kg per mix. The above comparison becomes a formula for determining the composition of ingredients in future *tinuktuk* production.

This concoction is very familiar among the Simalungunese, with an extensive local knowledge of medicinal ethnobotany. Pounding or grinding is a traditional practice, based on the capacity of the ancestors to process spices into healthy ingredients. In terms of benefits, the mixture appears significant in increasing the stamina, immunity, and body strength, as well as for maternity purposes. This segment describes local knowledge, including the habits, rules, and cognitive values on nutrition considered good and wise, or acceptable by every member. Local knowledge is greatly applied in health perspectives, particularly in terms of ethnomedicine and ethnopharmacology. The nutrients in *tinuktuk* do not only contribute to food, but the ability to maintain body strength, stamina, immunity, support lactation, and post-partum recovery, appears very important.

In Simalungunese, *tinuktuk* reflects traditional wisdom in form of a self-referential system that is actualized in a contingent social structure. Local ideas about medicinal plants and treatment based on the geographical environment are also integrated. The overall spices are further combined with the traditional healing social system institutionalized in Simalungun culture. This reality is in accordance with Pesurnay (2008) where local knowledge is perceived as a communicative social system that results in self-organization in a cultural framework.

Therefore, *tinuktuk* is local wisdom containing cognitive realities, including life views, ideas, patterned activities, artifacts, and nutritional fulfillment. Based on these descriptions, medicinal plant utilization greatly depends on the intended use. For instance, in an empirical study, the efficacy of medicinal plants is applied according to treatment objectives, and not every sample shows capacity to cure the entire diseases. Therefore, the Simalungunese demonstrated sufficient knowledge in the identification of various medicinal plants and their efficacy for nutritional and healing purposes.

Tinuktuk concoction is a curative mechanism based on empirical experience within the scope of ethnomedicine. In medical anthropology, ethnomedicine is a biocultural discipline concerned with the biological and cultural aspects of human behaviors, particularly in terms of health and diseases (Foster & Anderson, 1978; Colson & Selby, 1974), as well as specific lifestyle consequences (Fiennes, 1964). Ethnobotany, according to its culture, presents a human perspective that comprehends plants in the surrounding environment (Harrison & Waterlow, 2009). Medicinal plant knowledge correlates with drug studies involving social efficacy, experience, control, health commodification, technology appeal and value marketing (Whyte, van derGeest & Hardon, 2003; Harrison & Waterlow, 2009). Therefore, *tinuktuk* is a summary of the Simalungunese view on plants in the natural environment, both defensively and curatively related to health efficacy.

This description complements the *tinuktuk* concoction as a local knowledge that utilizes the leaves, stems, fruits, seeds, tubers, and rhizomes, with medicinal properties for health and recovery purposes. In addition, the efficacy is believed to trigger lactation during childbirth and subsequently remove dirty blood, increase immunity, maintain stamina, and also enhance appetite. The present study concludes that *tinuktuk* concoction is a herbal medicine and product of local knowledge for healing and treatment, based on empirical experience. The documentation provides an effective alternative in restoring raw materials, properties, and healing methods for modern medical practice. Therefore, the results of this study bridge the gap between traditional and modern knowledge in obtaining medicinal and conservational plant species.

Anthropologically, *tinuktuk* exhibits high empirical efficacy for stamina, immunity and lactation as the basic response to understanding diseases. However, the treatment of physiological ailments is not personal but requires an extensive process. Health institutions are also related to cultural contexts emphasizing common elements from the entire medical aspects (Foster & Anderson, 2016).

Tinuktuk is a product of local knowledge on medicinal plants and its locality reflects specific values and ideas due to the interaction with the physical environment. This concoction is largely associated with positive values, habits, and traditions of the Simalungunese, based on a social, cultural and environmental perspective. The reflection of a blend of external cultural ideas are accommodated, integrated, and internalized into individual culture as the right way of life (Sartini, 2007). Therefore, *tinuktuk* is a cognitive product adopted in Simalungunese to determine the responses, actions and behaviors on disease treatment. The inherent values are transferable to future generations, and are developed according to certain cultural levels (Meliono, 2012; Ariyanto, 2011). This context does not only focus on the sustainability of *tinuktuk*, but also on derivative products from similar ingredients packaged in tablets, pills, powders, sachets and etc.

Tinuktuk is a product of local knowledge and smart ideas, moral values, and practical experience adhered by every member (Wijayanti, 2019). Based on empirical experience of Simalungun, the mixture is widely known as traditional medicine and mechanism practiced by several generations. However, related studies on *tinuktuk* and ethnobotany of spices are currently limited but only one article linked the sample to health perspective. This

study, therefore, provides a complete documentation of *tinuktuk* as a traditional herb with substantial medicinal properties.

5. Conclusions

The documentation of *tinuktuk* herb provides an effective alternative in raw material recovery, efficacy and its applications, as well as treatment methods in modern medical practice. This study bridges the gap between traditional and modern knowledge in an attempt to determine the medicinal and conservational plant types. *Tinuktuk* is a product and insight into the structure and dynamics of healthy behaviors, rational responses or human cognitive orientations to diseases. As a consequence, the sample is believed to show high treatment efficacy, both in preventive and curative terms as well as other health segments, including stamina, immunity, lactation and appetite. Efficacy is based on empirical experience according to the index of cultural significance (ICS) and use values (UVs). This concoction includes not only nutritional fulfillment but cognitive responses and local ideas on geographic environments and diseases. *Tinuktuk* also reflects local knowledge that is actualized and implemented in a contingent social system. In addition, the phenomenon appears common in health institution related to the cultural context that emphasizes the general elements underlying every fitness aspects, including diet, disease types, treatment and recovery, as well as the medicinal plant species. The tendency to employ herbs for treatment purposes is based on empirical experience, although the present study concludes that *tinuktuk* is a herbal medicine from local knowledge, depending on heredity. This trend of applying concoctions requires a biological and laboratory evaluation of the herbal efficacy to determine the nutritional adequacy rate (RDA), side effects and health value. The present research recommends the need for laboratory testing and exploration of *tinuktuk* derivative products. Furthermore, equipment assessment appears very significant in accelerating the production processes involving extensive manual applications, while maintaining the job quality and efficiency.

Acknowledgments

The author is grateful to K. Girsang, S. Saragih, and the entire informants in Simalungun regency, Indonesia, for every assistance, information, and demonstration during *tinuktuk* processing. Further appreciations are conveyed to the Rector of the Universitas Negeri Medan, Head of the Institute for Research and Community Service, and the Dean of the Faculty of Social Sciences. This study was conducted with the support of the PNB Fund Universitas Negeri Medan according to the Decree of the Chairman of the LPPM Number 123/UN33.8/KEP/PPKM/2021.

References

- Alexiades, M.N. (ed.). (1996). Collecting ethnobotanical data: An introduction to basic concepts and techniques. In *Ethnobotanical Research: A Field Manual* (pp. 53-96). Bronx, NY: Scientific Publication Department the New York Botanical Garden.
- Ariyanto, R.W. (2011). *Mengelola local wisdom sebagai kekuatan bangsa*. Jakarta: Pusdiklat Industri Kementerian Perindustrian.
- Amrul, H.M. Susilo, F. & Huda, M.K. (2019). Ethnobotany to explore the potential of medicine plants in Sumatera Utara. *IOSR Journal of Pharmacy and Biological Sciences*, 14(5):38-42. <https://doi.org/10.9790/3008-1405013842>
- BPS. 2021. *Simalungun dalam Angka*. Pematangraya: Biro Pusat Statistik Kabupaten Simalungun.
- Batsu, S.C. (2017). Keterancaman leksikon kuliner masyarakat Simalungun: Kajian ekolinguistik. Skripsi. Program Studi Sastra Indonesia Fakultas Ilmu Budaya Universitas Sumatera Utara
- Bates, M. (1984). Man, food, and sex. *The American Scholar*, 27(4): 449-458.
- Brazia, A.C., Adi, L.T., Kaho, M.R., Lindawati, Rosaria., Rustiami, H., & Sukara, E. (2020). Upgrading Indonesian local ethnomedicinal knowledge with molecular phylogenetics. 5th International Conference on Food, Agriculture and Natural Resources (FANRes 2019). *Advances in Engineering Research*, 194. Atlantic Press.

- Caniago, I., & Siebert S.F. (1998). Medicinal plant ecology-knowledge and conservation in Kalimantan, Indonesia. *Economic Botany*, 52(3): 229-250.
- Clements, F.E. (1932). Primitive concepts of disease. *American Archaeology and Ethnology*, 32(2):185-252.
- Creswell, J.W. (2014). *Research design: Qualitative, quantitative, and mixed methods approach*. ThousandOaks, CA: Sage Publications.
- Creswell, J.W. (2007). *Qualitative inquiry and research design choosing among five approaches*. ThousandOaks, CA: Sage Publications.
- Colson, A.C., & Selby, K.E. (1974). Medical anthropology. *Annual Review of Anthropology*, 3: 245-263.
- Cocks, M.L. & Dold, A.P. (2006). Cultural significance of biodiversity: the role of medicine plant in urban African cultural practices in the Eastern Cape, South Africa. *Journal of Ethnobiology*, 26(1): 69-78.
- Cocks, M. (2006). Wild plant resources and cultural practices in rural and urban households in SouthAfrica: Implications for bio-cultural diversity conservation. PhD thesis, Wageningen University, Wageningen, The Netherlands.
- Cseke, L.J., Kirakosyan, A., Kaufman, P.B., Warber, S., Duke, J.A., & Briemann, H.L. (2006). *Natural products from plants*. London, UK: Taylor & Francis.
- Damanik, R.M. (2014). Kearifan lokal pemanfaatan tanaman *Torbangun (Coleus Amboinicus Lour)* dalam pembangunan gizi masyarakat di Indonesia. Orasi ilmiah Gurubesar Institut Pertanian Bogor, 6 Desember.
- Damanik, R.M. (2008). Torbangun (*Coleus amboinicus Lour*): A Bataknese traditional cuisine perceived as Lactagogue by Bataknese lactating woman in Simalungun, North Sumatra, Indonesia. *Journal of Human Lactation*, 25(1): 64-72. <https://doi.org/10.1177/0890334408326086>
- Damanik. 2021a. Reaching out and institutionalizing multiple kinship relationships in the social environment: *Ampang naopat* among Simalungunese, Indonesia. *Journal of Human Behavior in the Social Environment*, 1-22. <https://doi.org/10.1080/10911359.2021.1968558>. Retrieved from <https://www.tandfonline.com/eprint/7BJXAUCC3BF9EF96V4CW/full?target=10.1080%2F10911359.2021.1968558&>
- Damanik, E.L. (2021b). Dispute resolution: Pentagonal relationships in the Simalungun ethnic group. *Asia-Pacific Social Sciences Review*, 21(1):211-223. Retrieved from <https://apssr.com/volume-21-no-1/dispute-resolution-pentagonal-relationships-in-the-simalungun-ethnic-group/>
- Damanik, E.L. (2020). Menegakkan kekerabatan: Struktur lima saodoran pada upacara perkawinan etnik Simalungun. *Walusuji: Jurnal Sejarah dan Budaya* 11(1):1-28. <https://doi.org/10.36869/wjsb.v11i1.67>
- Damanik, E.L. (2019). Hiou, soja dan tolugbalanga: Narasi foto penampilan elitist pada busana tradisional Simalungun. *Jurnal Masyarakat dan Budaya*, 21(1):41-58. <http://dx.doi.org/10.14203/jmb.v21i1.800>
- Damanik, E.L. (2018a). Rekyasa budaya dan dinamika sosial: Menemukan pokok pikiran lokalitas budaya sebagai daya cipta. *Journal of Education, Humaniora and Social Sciences*, 1(2):93-104. <https://doi.org/10.34007/jehss.v1i2.9>
- Damanik, E.L. (2018b). *Potret Simalungun tempoe doeloe: Menafsir kebudayaan lewat foto*. Medan: Simetri Institute.
- Damanik, E.L. (2017a). *Agama, perubahan sosial dan identitas etnik: Moralitas agama dan kultural di Simalungun*. Medan: Simetri Institute
- Damanik, E.L. (2017b). *Tortor: Gerak ritmis, ekspresi berpola dan maknanya bagi orang Simalungun*. Medan: Simetri Institute
- Damanik, E.L. (2016a). *Busana Simalungun: Politik busana, peminjaman selektif dan modernitas*. Medan: Simetri Institute
- Damanik, E.L. (2016b). *Ritus peralihan: Upacara adat Simalungun seputar kelahiran, perkawinan, penghormatan kepada orangtua dan kematian*. Medan: Simetri Institute
- Damanik, E.L. (2016c). *Nilai budaya: Hakikat karya dan orientasi hidup orang Simalungun*. Medan: Simetri Institute.
- Damanik, E.L. (2015). *Amarah: Latar, gerak, dan ambruknya Swapraja Simalungun 3 Maret 1946*. Medan: Simetri Institute
- Damanik, E.L., Hasairin, A., Baiduri, R., Saragih, M.H., & Rajagukguk, A.V. (2021). *Tinuktuk: Eksplorasi olahan etnobotani rempah serta potensi pengembangannya di Simalungun*. Medan: Simetri Institute.

- DeGuzman, C.C., & Siemonsma, J.S. (eds). (1999). *Spices. PROSEA: Plant Resources of South-East Asia 13*. Leiden: Backhuys Publishers.
- Duke, J.A., Bogenschutz-Godwin, M.J., duCellier, J., & Duke, P.A.K. (2002). *Handbook of medical herbs*. London, UK: CRC Press.
- Ebadi, M. (2006). *Pharmaco dynamic basic of herbal medicine*. London, UK: Taylor & Francis.
- Fiennes, R. (1964). *Man, nature, and disease*. London: Weidenfeld and Nicolson.
- Foster, G.M., & Anderson, B.G. (2016). *Antropologi kesehatan*. Jakarta: UI Press.
- Guimbo, I.D, Muller J., & Larwanou, M. (2011). Ethnobotanical knowledge of men, women, and children in rural niger: a mixed methods approach. *Ethnobotany Research and Applications*, 9:235-242.
- Hakim, Luchman. 2015. *Rempah dan herba kebun pekarangan rumah masyarakat: Keragaman sumber fitofarmaka dan wisata kesehatan-kebugaran*. Yogyakarta: Diandra Pustaka Indonesia.
- Harrison, G.A., & Waterlow, J.C. (2009). *Diet and disease in traditional and developing societies*. Cambridge: Cambridge University Press.
- Hasairin, A. (2010). Variasi, keunikan dan ragam makanan adat etnis Batak Simalungun: Suatu kajian prospek etnobotani. *Jurnal Pengabdian kepada Masyarakat*, 17(5):51-62.
- Heinrich, M. L., Nebel, S., & Peschel, W. (2005). Local food nutraceuticals: An example of a multidisciplinary research project on local knowledge. *Journal of Physiology and Pharmacology*, 56(2): 5-22.
- Iwansyah, A.C., Damanik, R.M., Kustiyah, L., & Hanafi, M. (2017). Potensi fraksi Etil Asetat daun Torbangun (*Coleus amboinicus Lour*) dalam meningkatkan produksi susu, bobot badan tikus dan anak tikus. *Jurnal Gizi dan Pangan*, 12(1):61-68. <https://doi.org/10.25182/jgp.2017.12.1.61-68>
- Joy, P.P., Thomas, J., Mathew, S., & Skaria, B.P. (1998). *Medical plants*. India: Kerala Agricultural University.
- Leonti, M., Nebel, S., Rivera, D., & Heinrich, M. (2006). Wild gathered food plants in the European mediterranean: a comparative analysis. *Economic Botany*, 60(2):130-142.
- Martin, G.J. (1995). *Ethnobotany: A people and plants conservation manual*. London, UK: Chapman and Hall.
- Macbeth, H., & Mac, J.M. (2004). *Researching food habits: Method and problems*. New York: Berghahn Books.
- Meliono, I. (2011) Understanding the Nusantara thought and local wisdom as an aspect of the Indonesian education. *TAWARIKH: International Journal for Historical Studies*, 2(2):221-234. <https://doi.org/10.2121/tawarikh.v2i2.392>
- Nawangningrum, D.D., Widodo, S., Suparta, I.M., & Holil, M. (2004). Kajian terhadap naskah kuno Nusantara Koleksi Fakultas Ilmu Pengetahuan Budaya Universitas Indonesia: penyakit dan pengobatan ramuan tradisional. *Makara Sosial Humaniora*, 8(2): 45-53.
- Nurti, Y. (2017). Kajian makanan dalam perspektif antropologi. *Jurnal Antropologi: Isu-isu Sosial Budaya*, 19(1):1-10.
- Peter, K.V. (2001). *Handbook of herbs and spices*. Boca Raton, FL: Woodhead Publishing Limited and CRC Press LLC.
- Pesurnay, A.J. (2018). Local wisdom in a new paradigm: applying system theory to the study of local culture in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 175(1) <https://doi.org/10.1088/1755-1315/175/1/012037>
- Pieroni, A., Nebel, S., Santoro, R.F., & Heinrich, M. 2005. Food for two seasons: Culinary uses of non-cultivated local vegetables and mushrooms in a south Italian village. *International Journal of Food Sciences and Nutrition*, 56(4): 245-272.
- Pieroni, A. (2001). Evaluation of the cultural significance of wild food botanical traditionally consumed in Northwestern Tuscany, Italy. *Journal of Ethnobiology*, 21(1): 89-104.
- Prance, G.T., Balee, W., Boom, B.M., & Carneiro, R.L. (1987). Quantitative ethnobotany and the case for conservation in Amazonia. *Conservation Biology*, 1: 296-310.
- Purba, E.C., Nisyawati, & Silalahi, M. (2016). The ethnomedicine of the Batak Karo people of Merdeka sub-district, North Sumatra, Indonesia. *International Journal of Biological Research*, 4(2):181-189. <https://doi.org/10.14419/ijbr.v4i2.6493>
- Robi, Y., Kartikawati, S.M., & Muflihati. (2019). Etnobotani rempah tradisional di Desa Empoto Kabupaten Sanggau Kalimantan Barat. *Jurnal Hutan Lestari*, 7(1) 130-142.

- Richards, A. (2013). *Hunger and work in a savage tribe: A functional study of nutrition among the Southern Bantu*. London: Routledge. <https://doi.org/10.4324/9781315017396>
- Rivers, W.H.R. (1924). *Medicine, magic, and religion*. New York: Harcourt Brace.
- Saragih, I.L. (2020). Peran modal sosial dalam memelihara sambal rempah Tinuktuk. Skripsi. Program Studi Sosiologi Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Sumatera Utara.
- Saragih, S.N. (2016). *Tinuktuk sebagai pengobatan tradisional pasca melahirkan di Nagori Amborokan Panei Raya, Kecamatan Raya Kahean, Kabupaten Simalungun*. Skripsi Sarjana Pendidikan. Prodi Pendidikan Antropologi, Universitas Negeri Medan.
- Sartini. (2007). Menggali kearifan lokal Nusantara: Sebuah kajian filsafati, *Jurnal Filsafat*, 14(2):111-120. <https://doi.org/10.22146/jf.33910>
- Sidauruk, M. (2019). Nilai tambah rempah-rempah menjadi tinuktuk dan saluran pemasarannya. Skripsi. Program Studi Agribisnis, Fakultas Pertanian Universitas Metodis Indonesia, Medan.
- Silalahi, M., Supriatna, J., Walujo, E.B., & Nisyawati. (2015). Local knowledge of medicinal plants in sub-ethnic Batak Simalungun of North Sumatra, Indonesia. *Biodiversitas*, 16(1): 44-54. <https://doi.org/10.13057/biodiv/d160106>
- Silalahi, M., Nisyawati, & Anggraeni, R. (2018). Studi etnobotani tumbuhan pangan yang tidak dibudidayakan oleh masyarakat lokal Sub-etnis Batak Toba, di Desa Peadungdung Sumatera Utara, Indonesia. *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan*, 8(2): 241-250.
- Silalahi, M., Purba, E.C., & Mustaqiem, W.A. (2018). *Tumbuhan Obat Sumatera Utara: Monokotiledon*. Jakarta: UKI Press.
- Silalahi, M., Purba, E.C., & Mustaqiem, W.A. (2019). *Tumbuhan Obat Sumatera Utara: Dikotiledon*. Jakarta: UKI Press.
- Silalahi, M. & Nisyawati. (2017). The ethnobotanical study of edible and medical plants in the home garden of Batak Karo sub-ethnic Karo in North Sumatra, Indonesia. *Biodiversitas*, 19(1): 229-238.
- Silalahi M., Supriatna J., Walujo E.B., Nisyawati. (2013). Local knowledge and diversity of medicinal plants in sub-ethnic Batak Karo, North Sumatra. Proceeding of National Seminary Biodiversity and Indonesia Tropica Ecology. Andalas University, Padang, 14 September, Indonesia.
- Suryadarma IGP. (2010). Rukmini Tatwa, a Balinese script on the diversity of plant use for human body fitness. *Biota*, 15(2): 294-305.
- Sujarwo, W., & Cuneva, G. (2016). Using quantitative indices to evaluate the cultural importance of food and nutraceutical plants: Comparative data from the Island of Bali, Indonesia. *Journal of Cultural Heritage*, 18:342-348.
- Susiarti, S., Purwanto, Y., & Walujo, E.B. (2009). Medical plant diversity in Tesso Nilo National Park, Riau Sumatera Indonesia. *Reinwardtia*, 12(5): 383-390.
- Soediartha, A., Guhardja, E., & Sudarmadi. H. (1978). *Bumbu dan Rempah*. Bogor: Departemen Ilmu dan Kesejahteraan Keluarga Pertanian, Institut Pertanian Bogor.
- Spradley, J.W. (1997). *Metode Etnografi*. Yogyakarta: Tiara Wacana.
- Turner, N.J. (1988). The importance of a rose: Evaluating the cultural significance of plants in Thompson and Lillooet Interior Salish. *American Anthropologist*, 90: 272-290.
- United Nations Educational, Scientific, and Cultural Organization. (2003). Convention for the safeguarding of the intangible cultural heritage. Retrieved from http://portal.unesco.org/en/ev.php-url_id=17716&url_do=do_topic&url_section=201.html
- Voeks, R.A. (2007). Are women reservoir of traditional plant knowledge? gender, ethnobotany, and globalization in Northeast Brazil. *Singapore Journal of Tropical Geography*, 28:7-20.
- Wellin, E. (1977). Theoretical orientations in Medical Anthropology: Continuity and change over the Past Half-Century. In D. Landy (Ed.). *Culture, disease, and healing* (pp. 47-58). New York: Macmillan.
- Wijayanti, A.T. (2019). Penguatan nilai local wisdom melalui penerapan Petruk. *JIPSINDO: Jurnal Pendidikan Ilmu Pengetahuan Sosial Indonesia* 6(1): 70-86. <https://doi.org/10.21831/jipsindo.v6i1.24333>
- Whyte, S.R. Van derGeest, S., & Hardon, A. (2003). *Sosial lives of medicines*. Cambridge: Cambridge University Press.

Exploration of Medicinal Plants: Tinuktuk Concoction in Simalungunese, Indonesia

ORIGINALITY REPORT

16%

SIMILARITY INDEX

15%

INTERNET SOURCES

5%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1	www.researchgate.net Internet Source	6%
2	Submitted to Defense University Student Paper	5%
3	biodiversitas.mipa.uns.ac.id Internet Source	2%
4	repository.maranatha.edu Internet Source	1%
5	sabraojournal.org Internet Source	<1%
6	download.atlantis-press.com Internet Source	<1%
7	bircu-journal.com Internet Source	<1%
8	D Kartika, F R Suwanto, D Y Niska, N F Ilmiyah. "Analysis of frieze and crystallographic patterns of North Sumatran Malay songket	<1%

textile", Journal of Physics: Conference Series,
2022

Publication

9

Submitted to University of Newcastle upon
Tyne

Student Paper

<1 %

10

digilib.unimed.ac.id

Internet Source

<1 %

11

Cristina Baldauf, Flavio Antonio Maës dos
Santos. "The effect of management systems
and ecosystem types on bark regeneration in
Himatanthus drasticus (Apocynaceae):
recommendations for sustainable harvesting",
Environmental Monitoring and Assessment,
2013

Publication

<1 %

12

garuda.kemdikbud.go.id

Internet Source

<1 %

13

Sabine Nebel, Andrea Pieroni, Michael
Heinrich. "Ta chòrta: Wild edible greens used
in the Graecanic area in Calabria, Southern
Italy", Appetite, 2006

Publication

<1 %

14

jurnal.unimor.ac.id

Internet Source

<1 %

15

repositorio.uam.es

Internet Source

<1 %

16 repository.unam.na Internet Source <1 %

17 S Rohmat, Nisyawati, S E Rahayu. " Diversity of medicinal plants for pregnancy and postpartum care of tribe in Mantangai sub-district, Kapuas reGENCY, Central Kalimantan ", Journal of Physics: Conference Series, 2019 Publication <1 %

18 ojs.uma.ac.id Internet Source <1 %

19 www.sciencegate.app Internet Source <1 %

Exclude quotes Off Exclude matches Off
Exclude bibliography On

THE
Character Building
UNIVERSITY