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Ethnobiological study of *Hare*, a traditional food in the *Parmalim* community, North Sumatra, Indonesia

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Abstract. *Amrul HMZN, Pasaribu N, Harahap RH, Aththorick TA. 2022. Ethnobiological study of* Hare*, a traditional food in the* Parmalim *community, North Sumatra, Indonesia. Biodiversitas 23: 6082-6088.* Indonesia has a variety of traditional foods that come from different social and cultural communities. One of the tribes in North Sumatra is the *Batak*. In the *Toba Batak* community, there is a belief or religion system called *Parmalim*. The *Parmalim* community is one of the indigenous faiths in *Batak*, which has grown and developed over time and is embraced by the *Batak*. The existence of traditional food known as *Hare* is one of the community's traditions. The purpose of this study is to describe how *Hare* was made, the ingredients included, and the nature of the benefits through an ethnobotanical study. The traditional botanical knowledge was traced through a series of field observations and semi-structured interviews with eight respondents from the religious officials and experts in Parmalim using a purposive sampling technique. Based on the interviews, *Hare* was prepared from herbs, honey, buffalo milk, and chicken eggs. The total ingredients used in making *hare* were 16 ingredients consisting of 13 species of plants and three species of animals. *Hare* is prepared from cultivated plants such as *Cocos nucifera*, *Citrullus lanatus*, *Cucumis sativus*, *Artocarpus heterophyllus*, *Musa acuminata*, *Oryza sativa*, *Kaempferia galanga*, and *Curcuma domestica* Valeton) and wild plants such as *Saurauia bracteosa*, *Neptunia oleracea*, *Desmodium adscendens*, *Hibiscus mutabilis*, and *Chrysophyllum roxburghii*. At first, *hare* is thought to be a nutritious diet and a pregnancy stimulant for young pregnant women. Recently, the traditional dish must be preserved, one of which is by promoting this dish on the cultural and formal agenda at Toba District, North Sumatra.

Keywords: Ancient religion, *Batak*, local cuisine, traditional botanical knowledge

INTRODUCTION

Indonesia has a diverse ethnic population (Widyanti et al. 2015). Ethnic variety and biodiversity exist in each region of the country. North Sumatra is one of the provinces with a high variety of ethnic communities. The *Batak* ethnicity is one of the indigenous ethnic tribes that live on Sumatra Island. The *Batak* comprises six sub-tribes, *Toba, Karo, Simalungun, Pakpak, Angkola* and *Mandailing* (Silalahi 2018). Each tribe has differences, for example in terms of dialect, writing, and some basic customs. As one of the Batak sub-tribes, the *Toba Batak* people claim to be the source of other sub-tribes. The *Toba Batak* community also has a belief or religious system called *Parmalim* (Siburian et al. 2022). One of the religious beliefs that upholds the tradition and origin of *Batak* culture is the *Parmalim* community.

The *Parmalim* community grew and developed locally and was embraced from time immemorial. The *Parmalim* belief, also known as *Ugamo Malim*, is recognized as religious teaching brought by King Sisingamangaraja XII, who was a king of Toba region and the leader of *Batak* when fighting together against the Dutch colonial at that time. The Parmalim community is a religious group that adheres to ancient Batak customs and culture. The *Parmalim* belief is centered in Huta Tinggi, Laguboti Subdistrict, Toba District. In this area, a place of worship for the *Parmalim* community was built called *Balai Pasogit*. There is only one building for this place of worship, namely the one with *Huta Tinggi*. The highest leadership of the *Parmalim* community is referred to as *Ihutan Parmalim*. The Indonesian government recognized the existence of this religious system based on the Ministry of Education and Culture in 1980, Number I/136/F3/N.1.1/1980 (Siregar et al. 2020).

The existence of plants cannot be detached from other community activities such as religious ceremonies, food, and medicine. Furthermore, traditional medicines, herbal remedies, and contemporary medications may contain ingredients made from wild plants, animals and even in foods (Dorai 2012). In Indonesia, many unique ethnic groups still know about traditional processing of foods. Still, the inheritance of this knowledge is threatened to be lost due to shifts in food preferences by the commercialization of foreign food inputs (Colozza and Avendaño 2019). Several attempts have recorded the traditional knowledge of the tribes in Sumatra, one of which is described by the *Karo Batak* ethnicity. Purba et al.

(2018) documented a traditional *Karo* food known as *terites* which is the liquid from partially digested grass by ruminants and cooked with other plants and spices such as *Alpinia galanga, Bischofia javanica, Capsicum annuum, Cymbopogon citratus, Etlingera elatior, Solanum lycopersicum*, and *Zingiber officinale*. However, they claimed that the younger generations tend not to consume this local cuisine anymore. Another study by Syamsuardi et al. (2022) regarding *Aneuk Jamee* traditional foods in the South Aceh District, Indonesia, to preserve the traditional element in the future. In addition, they noted that the loss of traditional knowledge, particularly regarding the indigenous and traditional foods of the *Aneuk Jamee* Tribe, may result from a decline in knowledge transmission from generation to generation.

Numerous studies have been conducted on the *Parmalim* community, including their existence, historical background, culture, and religious ceremonies (Siregar and Gulo 2020; Siregar et al. 2020). The use of plants by the *Batak* and *Karo* people has been the subject of extensive study in North Sumatra, but there is no information specifically from the *Parmalim* community (Silalahi and Nisyawati 2018; Silalahi et al. 2019). According to *Ihutan Parmalim*, the religious leader of *Parmalim*, *hare* is one of the traditional dishes that is gaining popularity and cultural relevance to the recent generation. This information is another good justification for documenting the animal and plant ingredients used to prepare *hare*. We then conduct an ethnobotanical study to detail the procedure of preparing *hare*, the materials, and its cultural contribution to the community. This study also provides information about *hare* to the general public to transmit knowledge to the younger generation.

MATERIALS AND METHODS

Study area

The study was conducted in three villages namely Pardomuan Nauli Village in Laguboti Subdistrict, Sampuara Village, Uluan Subdistrict, and Nalela Village in Porsea Subdistrict, Toba District, North Sumatra, Indonesia (Figure 1). *Parmalim* community often gather in a clustered area known as *Huta Tinggi*, a religious center in Pardomuan Nauli Village (Figure 2). In addition, the community has direct access to the protected forest region named Protection Forest Register 89 in Sampuara Village, collect some plant ingredients for cultural and medicinal use. Geographically, these villages are situated around 932-1,150 m above sea level.

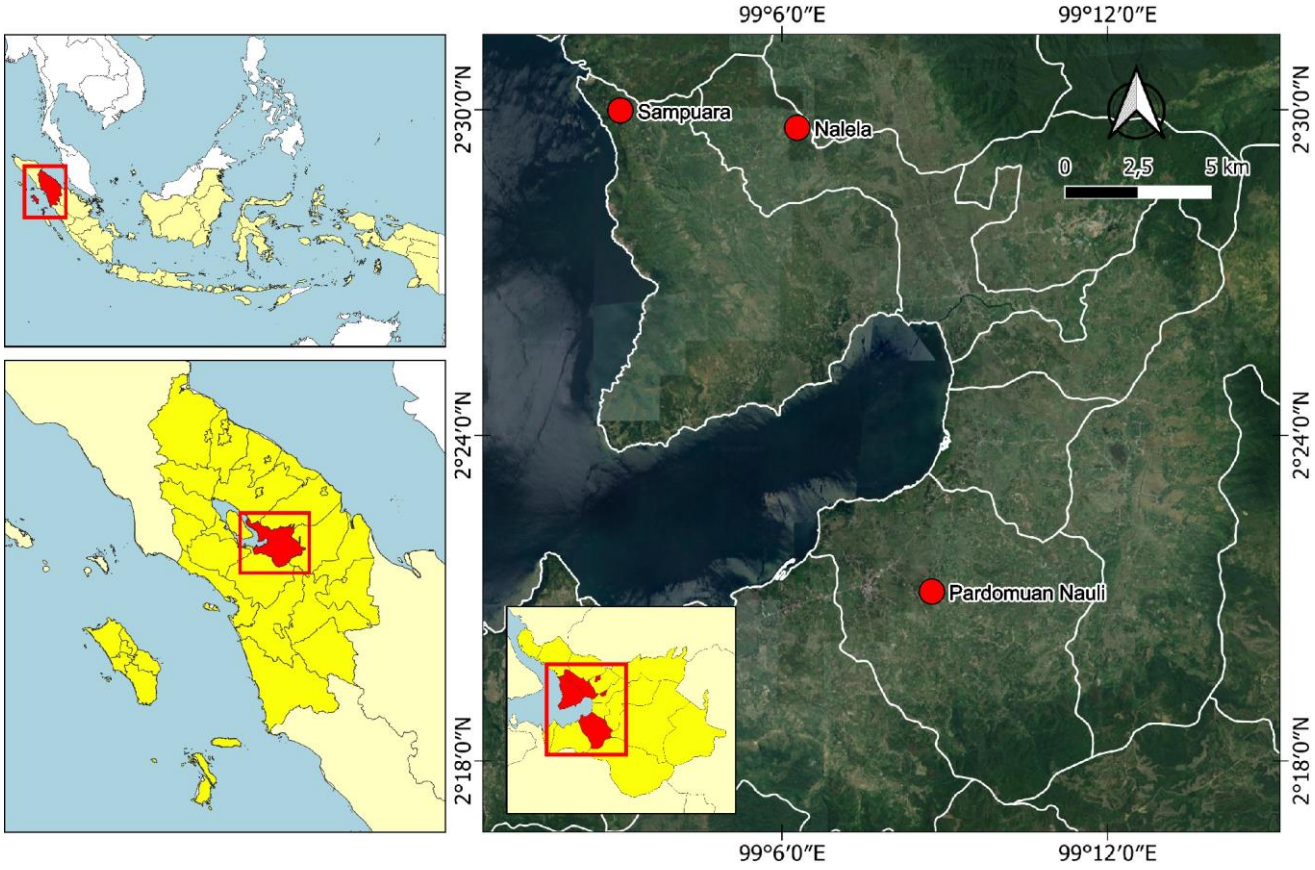

Figure 1. Map location of Pardomuan Nauli, Nalela, and Sampuara in Toba District, North Sumatra, Indonesia as study sites

Figure 2. *Parmalim* community in a religious ceremony. Traditional food is one of the offerings given to the Almighty God

Description of *Parmalim* community

Parmalim is a religion that is practiced especially in North Sumatra. God as the "*Debata Mulajadi Nabolon*" the creator of humans, the earth, the sky, and all the contents of the universe is worshiped by the people of *Ugamo malim*. The *Batak* community itself, based on oral stories from their parents which was passed down from generation to generation, said that the origin of *Parmalim* began with King Sisingamangaraja XII, who came to power to replace his father, Sisingamangaraja XI who died in 1875. The belief in *Ugamo malim* was first initiated by a *datu* named Guru Somaliang Pardede, who was very close to Sisingamangaraja XII (the last king of the Sisingamangaraja dynasty). This teaching was carried out by the followers of Sisingamangaraja (especially by two of its war leaders, Guru Somaliang and Raja Mulia Naipospos) to protect the traditional beliefs and culture of the *Toba Batak* from Christian, Islamic, and Dutch colonialist influences (Katimin 2012). Tichelman (1937) stated that the occurrence of cultural contact had influenced the formation of *Parmalim* teachings and produced syncretic religious products. For example, some Catholic elements could be found in it, such as Jahowa (Jehovah, the name of God in Catholic teaching), Mary, Jesus, and the names of sacred people in Catholicism. The influence of Islam is also contained in these teachings. The name *Parmalim* comes from the Malay language, namely from the word "*malim*" (in Arabic converts), which means an expert in religious knowledge. In 1921, Raja Mulia tried to build a house of worship in *Huta Tinggi* and asked the Dutch for permission. The Dutch government approved the request of King Mulia to establish a *Bale Pasogit* with Controleur Van Toba's letter No. 1494/13 Dated June 25, 1921, delivered by the assistant Demang Laguboti on August 5, 1921. Raja Mulia and his comrades in arms in establishing the Bale Pasogit in Huta Tinggi experienced many obstacles, but in the end, they were resolved.

Data collection

A field study was conducted from August 2018 to December 2019. Traditional botanical knowledge was recorded using in-depth interviews, semi-structured and general conversations in *Bahasa* to extract *hare* information regarding the animal and plant part(s) used, local botanical and zoological names, local preparation, and local uses. We collected data from eight informants, i.e., one informant from *Ihutan Parmalim* (supreme religious leader), one informant from *Sebaso* (village shaman), two informants from *Ulu punguan* (sectoral religious leader), and four informants from villagers who are engaged in the preparation of *hare*. The participants were selected using the purposive sampling method (Tongco 2007). Before conducting interviews, we obtained informed consent and followed the ethical guidelines of the International Society of Ethnobiology (ISE 2006). During the interviews, fresh plants were collected and transferred into duplicate specimens for species authentication in Herbarium ANDA, Universitas Andalas, Padang, Indonesia. Meanwhile, we obtain information regarding the parts of the animals used directly through field observations.

RESULTS AND DISCUSSION

The symbolic meaning of *hare* in the traditional *Parmalim* custom

Hare consisted of 13 species of plants and three species of animals. Some materials must be used directly while some require processing at first. For example, *Bubalus bubalis* (Milk), *Gallus gallus domesticus* (eggs), and *Apis cerena* (honey) can be directly used in making *hare*. In the plant category. All utilized parts must be washed appropriately at first for the plant category. *Cocos nucifera*

(fruits) was utilized in the form of milk (coconut milk) by Indonesian people called *santan*. Coconut milk is commonly used by people in Indonesia, especially the Minangkabau tribe in making *ketupat* (Rianti et al. 2018). *Oryza Sativa* (grains) was crushed and then sieved to obtain fine flour. The other ingredients were ground or crushed and then mixed such as *Saurauia bracteosa* (fruits), *Citrullus lanatus* (fruits), *Cucumis sativus* (fruits), *Neptunia oleracea* (whole plants), *Desmodium adscendens* (whole plants), *Hibiscus mutabilis* (root), *Artocarpus heterophyllus* (fruits), *Musa acuminata* (fruits), *Chrysophyllum roxburghii* (Fruits), *Kaempferia galanga* (Rhizome), *and Curcuma domestica* (Rhizome). These ingredients in the form of extracts or liquids will later be cooked into *hare*. All ingredients are mixed together and cooked over medium heat while constantly stirring.

Hare was originally a food served when a young woman (married) became pregnant. The food is prepared by the husband and his family accompanied by *Sebaso* as the one who provides the recipe and way of serving. In ancient times, telling others about our pregnancy condition was considered taboo. The *Batak* community conveys the good news of their pregnancy by preparing and sharing *hare*. The customary procedure of presenting *hare* by a pregnant woman was placing a bowl containing *hare* on her head. Then, the woman will walk from her father-in-law's house to her parents' house. Along the way, the pregnant woman will share a portion of *hare* with anyone she meets on her journey. This tradition shows a philosophy that there are rules and ethics when you want to inform someone about anything. The action taken is full of prudence and a sense of willing to share happiness with others. The share of *hare* with other people is a form of gratitude for the pregnancy she is experiencing. The activity of sharing something as gratitudes was carried out by many people in Indonesia, such as the tradition of the *Mualang Dayak* community in Sekadau District, West Kalimantan, Indonesia (Hartini and Fusnika 2019). They actually gave offerings as a form of gratitude for the abundant harvest through the *Naik Jurong* tradition. A similar custom was also reported by the people in the village of Cerme Kidul, Gresik District, East Java, Indonesia. The people give alms by offering crops as a gesture of appreciation for the abundant harvest, according to Slamet et al. (2015).

In the past, if a young woman walked by giving *hare*, it was a sign that she was pregnant. This situation existed in the past, but the *Batak* community has since abandoned this custom, especially with developments in information technology, where good or bad news can now be shared via social media. The Batak community and the government have started promoting *hare* as traditional Toba food served at every traditional event. *Hare* made from selected ingredients, has good nutritional content for health. It is hoped that in the future, *hare* will be known by the wider community, just as we know *rendang*, a slow-cooked beef drained with coconut milk and spices as a typical Minangkabau food that is rich in nutrients and savory (Nurmufida et al. 2017).

Biological ingredients used in *hare*

Based on an interview with *Ihutan Parmalim*, *hare* is made from selected ingredients (plants, animals), each of which are believed to be beneficial for the human body, as presented in Table 1, Figure 3, and Figure 4. On this occasion, *Ihutan Parmalim* also explained that we could prepare *hare* without all of mentioned ingredients. Pirdot (*Saurauia bracteosa*) and Andalehat (*Chrysophyllum roxburghii*) are seasonal fruiting plants, so they only sometimes have to be present in making *hare*.

Table 1. Biological ingredients used in the preparation of *hare*

Family	Scientific name	Local name	Parts used	Source
Flora				
Actinidiaceae	*Saurauia bracteosa* DC.	*Pirdot*	Fruit	Wild plants
Arecaceae	*Cocos nucifera* L.	*Harambir*	Fruit	Cultivated plants
Cucurbitaceae	*Citrullus lanatus* (Thunb.) Mansf.	*Gundur*	Fruit	Cultivated plants
Cucurbitaceae	*Cucumis sativus* L.	*Ansimun*	Fruit	Cultivated plants
Fabaceae	*Neptunia oleracea* Lour.	*Simarsinta-sinta*	Whole plant	Wild plants
Fabaceae	*Desmodium adscendens* (Sw.) DC.	*Simarateate*	Whole plant	Wild plants
Malvaceae	*Hibiscus mutabilis* L.	*Puba jolma*	Root	Wild plants
Moraceae	*Artocarpus heterophyllus* Lam.	*Pinasa*	Fruit	Cultivated plants
Musaceae	*Musa acuminata* Colla	*Gaol*	Fruit	Cultivated plants
Poaceae	*Oryza sativa* L.	*Padi*	Fruit	Cultivated plants
Sapotaceae	*Chrysophyllum roxburghii* G.Don.	*Andalehat*	Fruit	Wild plants
Zingiberaceae	*Kaempferia galanga* L.	*Hasihor, Kencur*	Rhizome	Cultivated plants
Zingiberaceae	*Curcuma domestica* Valeton	*Kunyit*	Rhizome	Cultivated plants
Fauna				
Bovidae	*Bubalus bubalis* L.	*Bagot Ni Horbo*	Milk	Livestock
Phasianidae	*Gallus gallus domesticus* L.	*Ayam*	Broth, eggs	Livestock
Apidae	*Apis cerana* Fabricius	*Tuak ni Loba*	Honey	Wild animals

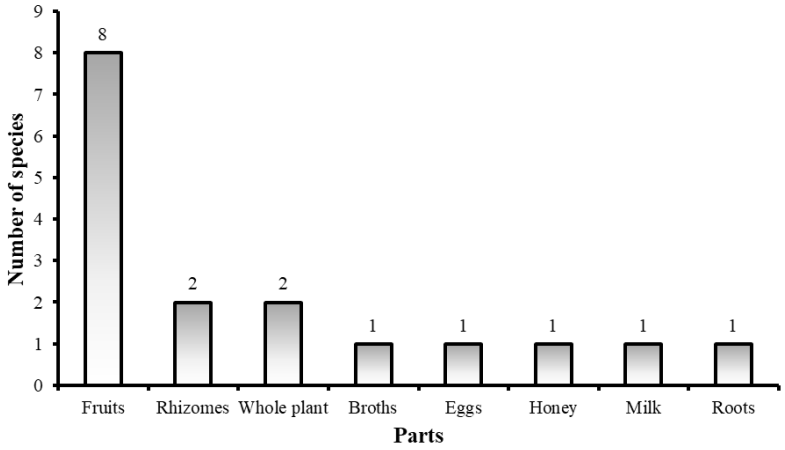

Figure 3. The number of species with its utilized part(s) in making *hare* by *Parmalim* community. Plant part(s): Fruits, Rhizomes, Whole plant, Roots. Animal part(s): Broths, Eggs, Honey, Milk

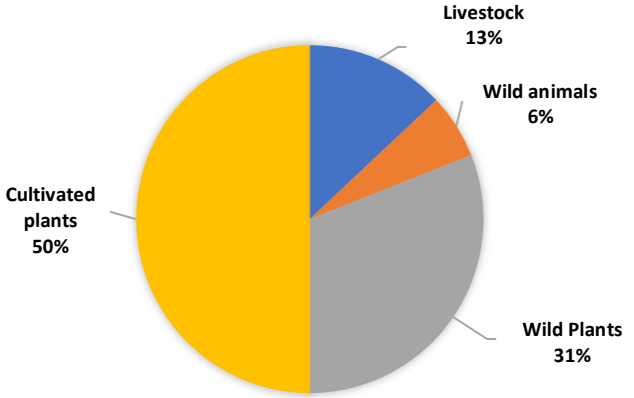

Figure 4. Source of biological ingredients in the making of *hare* by *Parmalim* community

Hare is a typical *Toba Batak* food, and originally came from 16 types of materials derived from plants and animals. The plants used as ingredients for making *hare* have different contents. The *Parmalim* community also used most of the ingredients used in making *hare* as ingredients for traditional medicine. *Saurauia bracteosa* (Fruits) is used as a drug to treat diabetes, tumors, and cancer. This finding has also been further investigated by Pasaribu et al. (2020), that *Saurauia bracteosa* have biological activity including antioxidant, cholesterol-lowering, antidiabetic, antihyperlipidemic, analgesic, antimicrobial, wound-healing, and immunostimulatory activity. *Cocos nucifera* (Fruits), a traditional food ingredient, has also been used in traditional medicine. Debmandal and Mandal (2011) reported that coconut contains antibacterial, antifungal, antiviral, antiparasitic, antidermatophytic, antioxidant, hypoglycemic, hepatoprotective, and immunostimulant.

Citrullus lanatus (Fruits) is a fruit plant favored by many people due to its sweetness and freshness. *Citrullus lanatus* contained biological activity compounds including antiplasmodial, anti-inflammatory, antiprostatic hyperplasia, antigiardial, antioxidant, analgesic properties, effects on the histology of the kidney in adult Wistar rats, antisecretory, antidiabetic, laxative, antiulcerogenic, and hepatoprotective activities (Erhirhie and Ekene 2013).

Cucumis sativus (Fruits) is rich in biological activity compounds, including antibacterial, antifungal, cytotoxic, antacid and carminative, activity against ulcerative colitis, hepatoprotective, hypoglycemic and hypolipidemic, and wound healing. Saeedi et al. (2020) mentioned that the fruit of *Cucumis sativus* can be used to treat skin problems, depurative, demulcent, emollient, and purgative, through decades/ centuries. In Indo-China, its raw fruit is traditionally used to treat dysentery in children. These fruits are also useful in burning sensation, hyperdipsia, insomnia, bronchitis, jaundice, and for treating menstrual disorders in Khagrachari, Bangladesh. *Neptunia oleracea* (Whole plants) as food or traditional medicine is still a debate. However, this plant is still used in traditional medicine in some areas. Bhumireddy et al. (2022) reported that plants were used to cure earaches, dysentery, syphilis, and tumor.

Desmodium adscendens (Whole plants) has been reported to exert some biological and pharmacological activities such as antiasthmatic, neurological effects, antioxidant, hepatoprotective and antimicrobial (Manzione et al. 2022). *Hibiscus mutabilis* (Roots) has been widely used by the community as traditional medicine. For example, the *Parmalim* community used *H. mutabilis* as a fertility drug with the egg yolk of chickens. *Hibiscus mutabilis* has anti-inflammatory, analgesic, antiproliferative, antioxidant and antiallergic which are suitable for traditional medicine (Das and Islam 2019).

Artocarpus heterophyllus (Fruits) is a plant with a sweet taste containing antioxidant, anti-inflammatory, antibacterial, anticariogenic, antifungal, antineoplastic, hypoglycemic, wound healing effects and causes a transient decrease in sexual activity (Baliga et al. 2011). *Musa acuminata* (Fruits) has many benefits such as antioxidant, antidiabetes, immunomodulatory, anticancer, and antimicrobial. In addition, the consumption of bananas before meals can help reduce morning sickness because it stabilizes sugar levels and provides the necessary vitamin

required by the mother and developing fetus (Jyothirmayi and Rao 2015).

Oryza sativa (Grains) is widely consumed by people from almost all over the world, including Indonesia, not only as a staple food but also as traditional medicine. In order to increase libido and prevent sexual dysfunction, rice has been used as a sexual tonic, as a facial wash and cream to treat pimples, and as an ethnoveterinary treatment for skin conditions. Furthermore, rice is used as a traditional medicine to treat inflammation, gastrointestinal ailments, hypercholesterolemia, diabetes, and skin diseases (Burlando and Comara 2014). In addition, *Chrysophyllum roxburghii* (Fruits) is reported to exert benefits as a uterine booster or fertilizer in women (Prashith et al. 2014).

Kaempferia galanga (Rhizome) is a medicinal plant species that has several pharmacological activities like antimicrobial, antioxidant, amoebicidal, analgesic, anti-inflammatory, antituberculosis, antidengue, antinociceptive, antiangiogenic, anticancer, hyperlipidemic, hypopigmentary, osteolysis, larvicidal, insecticidal and mosquito repellent, nematocidal, sedative, sniffing, vasorelaxant, and wound healing (Kumar 2020). *Curcuma domestica* (Rhizome) has many benefits in Indonesia and other countries such as India, China, and South East Asia. The species has anti-inflammatory, antioxidant, anticarcinogenic, antimutagenic, anticoagulant, antifertility, antidiabetic, antibacterial, antifungal, antiprotozoal, antiviral, antifibrotic, antivenom, antiulcer, hypotensive, and hypocholesterolemic activities (Verma et al. 2018).

Buffalo milk *(Bubalus bubalis)* has a high fat, protein, and calcium content, so it is very good for health. Calcium, magnesium, potassium, and phosphorus are all abundant in buffalo milk. In addition, this milk has trace amounts of iron, sodium, zinc, copper, and manganese. A good source of riboflavin and vitamin B12 is buffalo milk. Additionally abundant are thiamin, vitamin C, and vitamins A and A. Buffalo milk also contains trace amounts of niacin, vitamin B6, pantothenic acid, folate, and pantothenic acid (Ahmad et al. 2013).

The use of *Gallus gallus domesticus* (Eggs), is widely used by the community, especially in Indonesia. The yolk from *Gallus gallus domesticus* can increase endurance. In addition, the consumption of egg yolks can increase the immune system and reduce the consumption of antibiotics in developing countries (Kovacs-Nolan and Mine 2012). Buffaloes and chickens for the *Parmalim* people also have cultural meanings. Buffalo is an animal offering to the creator, which is carried out during the *Sipaha Lima* religious ceremony, while the chicken itself is a religious symbol for the *Parmalim* community (Amrul et al. 2019). Honey from *Apis cerana* is widely used because it has many health benefits. Honey plays an important role as an antioxidant, anti-inflammatory, antibacterial agent and augments the adherence of skin grafts and the wound healing process (Meo et al. 2017).

In conclusion, we have documented 16 materials used as ingredients in making *hare* and the scientific information regarding their beneficial properties to the human body. Modes of preparing *hare* were mixing utilized plant parts and animal sources (buffalo milk, honey, chicken eggs). A young pregnant woman led the customary procedure of presenting *hare* as a symbol of her joyfulness upon her pregnancy by sharing a portion of the food with her neighbors. Despite its valuable symbolic meaning and traditional belief in preparing *hare,* the food is facing a loss of tradition due to the development of technology and negligence of local wisdom. Through the support of the local government, *hare* is promoted as a typical *Batak* food to preserve its identity and a precious symbol to one of the original religious beliefs in North Sumatra, the *Parmalim* community. We may further investigate the *hare*'s nutritional composition through laboratory analysis.

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