

REVIEW ARTICLE

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Lamang tapai: the ancient Malay food in Minangkabau tradition

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Abstract

Lamang tapai is a traditional food which consists of *lemang* and *tapai* that are used in various traditional ceremonies of Minangkabau people, mainly in West Sumatra. However, *lemang* and *tapai* are also known as traditional foods of other tribes or regions in Southeast Asia, and their cooking method is still very ancient and depends on the state of nature. These two points show that *lemang* and *tapai* can be used as historical evidence for ancient human life in Southeast Asia, which is Proto-Malay and Deutero-Malay. Minang people believe that cooking technique of *lemang* was first introduced by Sheikh Burhanuddin. *Lemang* is incomplete if it is not eaten together with *tapai*, so they are likened to a man and a woman by Minang people. *Lemang* itself describes the togetherness of Minang people because its making process is always done together. There are several taboos that must be obeyed in making *lemang* and *tapai*. *Lamang tapai* are also used as gifts when visiting other people's homes, for example, when visiting in-laws or *manjapuik marapulai* ceremony. However, there is no symbolic meaning behind the obligatory existence of *lamang tapai* at traditional ceremonies. On the other hand, *lemang* and *tapai* are famous for their unique taste produced by the chemical components in their ingredients. In this article, the origin of *lemang* and *tapai*, the philosophy and presentation of *lemang* in the traditions of the Minangkabau people, and the flavor features of *lemang* and *tapai* from a scientific perspective are discussed.

Keywords: *Lemang*, *Lamang*, Minangkabau, *Tapai ketan*, *Tape ketan*

Introduction

A traditional food is an identity of a tribe or nation because of its relation to the culture of the people in that nation or tribe. However, some traditional foods used in traditional ceremonies of the community in a region or tribe are also used in traditional ceremonies of the community in other regions or tribes. This kind of food can be historical evidence about the origin of the population in a region or the cultural influence of other nations on a nation. *Lemang* and *tapai* are two examples of typical foods in Indonesia which are also known as traditional foods of other countries.

Lemang is a food made from white glutinous rice mixed with coconut milk in a bamboo in which its inner part has been coated with banana leaf and cooked using open fire. This bamboo rice can be found in Indonesia, Malaysia [1], Brunei Darussalam [2], and Thailand [3]. It is generally called *lemang* by Indonesians [4], Malaysians

[1], and Bruneians [2]; as *khao lham* in Thailand [3]; as *lomang* by Batak people; and as *lamang* by the Minangkabau people [4].

People in each region have their own ways to enjoy *lemang*. Some people consume *lemang* with salty foods such as *rendang* and eggs, and the others consume it together with sweet complementary ingredients such as jam, liquid brown sugar, and grated coconut. However, in Minangkabau, *lemang* is identically served with *tapai* (or *tape*). These two foods are often considered as one food called *lamang tapai* [5]. Minangkabau or commonly called as *Minang* is an ethnic group that dominate the population in West Sumatra, Indonesia (Fig. 1).

There are two kinds of *tapai*, namely *tapai singkong* (also known as *peuyeum*) and *tapai ketan* (also known as *tapai pulut*). *Tapai* which is served with *lemang* is *tapai ketan*, the black sticky rice which is fermented by *ragi*. Not only known in Indonesia and Malaysia, *tapai ketan* is also known in Thailand as *khaomak* and in China as *lao-chao* [6, 7].

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Fig. 1 The map of ethnic groups in Sumatra. Minangkabau region is marked in light and dark olive on the map. This map shows that West Sumatra with Padang as the capital city is the center of the Minangkabau tribe. Source: Based on "Peta Suku Bangsa di Indonesia" at National Museum of Indonesia, Jakarta in wikipedia.org, 2010

Although *lemang* and *tapai* can be found in various other regions, *lemang* which is consumed along with *tapai* is well-known to be found in the Minangkabau highlands. One of them is Batusangkar Market in Tanah Datar District. The savory and sour taste of *lemang tapai* is believed to warm the human body in the highlands [8].

Most of the area of West Sumatra Province as the homeland for Minangkabau people is highland. In this highland, there are three well-known areas called Luhak nan Tigo, which roughly means "the three mountains": Luhak Agam, Luhak Payakumbuh or 50 Koto (50 cities), and Luhak Tanah Datar. These areas are the origin places of the development of the Minangkabau ethnic group [9]. Moreover, the Minangkabau people are very famous for their wandering or going overseas culture. They succeeded in forming populations in other parts of Indonesia (Pekanbaru, Jakarta, Bandung, Medan, Batam, Surabaya, Palembang), Malaysia (Negeri Sembilan, Kuala Lumpur,

Malacca, Penang), Singapore, and Brunei Darussalam [10]. These are the reasons behind the recognition of *lemang tapai* as a typical food of Minangkabau that can be found in various other regions.

Lemang tapai is widely consumed as a break-the-fast menu in the month of Ramadan and as a dish at various traditional ceremonies and Islamic holidays, especially in Minangkabau. According to Bakry, the culturalist, Minang people feel strange if there is no *lemang* in an event held by people from their ethnic, because presenting *lemang* at each event has become an inherent habit for them. There is also a tradition called *malamang* which is routinely carried out by Minang community before important celebrations are held. In this tradition, they work together to make *lemang*: prepare ingredients and equipment and burn *lemang* [11].

Lemang has unique and soft fragrant aroma due to its ingredients and traditional cooking process. Traditional method of cooking *lemang* which uses bamboo as

cooking equipment shows that *lemang* is the evidence of ancient human life that was very dependent on nature and did not know metal cookware yet. On the top of that, there is also a folklore that is believed by Minang people as an explanation of how they knew the making process of *lemang* for the first time, which will be discussed in this review. Specific bamboo species for making *lemang* itself and two other ingredients such as coconut milk and banana leaves cause *lemang* to have a pleasant aroma. On the other hand, *tapai* as a complement to *lamang* has the aroma of alcohol and sweet-and-sour taste due to fermentation process that has been known since ancient times.

Previous review made by Wahyudi et al. (2017) only describes the culture of *lemang* in general in several regions of Indonesia. There has been no review about the origin of *lemang* and *tapai*, and the philosophy and presentation of *lamang tapai* in Minangkabau tradition specifically. Both *lemang* and *tapai* can be historical evidence of the origin of the Minangkabau population and their tradition thanks to the popularity of *lamang tapai* as a traditional food of Minangkabau. Moreover, the specialty of *lemang* and *tapai* as traditional food which came from their unique aroma and taste can be explained scientifically. Therefore, this review will describe the origin of *lemang* and *tapai*, the philosophy and presentation of *lamang tapai* in the traditions of the Minangkabau people, and the flavor features of *lemang* and *tapai* from scientific perspective.

The origin of *lemang* and *tapai* in Minangkabau Lemang

Asnan, a professor of history, said that the technique of cooking rice using bamboo which is the basis for the creation of *lemang* is thought to have been known by the Proto-Malay or Deutero-Malay people, who were the ancestors of Indonesian people because it was known by various ethnic groups in Indonesia, especially in the West. This statement was supported by Wojowasito (1970) who stated that the Proto-Malay nation had been able to use rice, sugar, coconuts, bamboo, bananas, and rattan from its origin.

Proto-Malay was a nation that came to the Indonesian mainland from Yunnan in South China around 3000 BC [12]. Yunnan is known as the region with the highest number of bamboo species and the most abundant natural bamboo forest in the world [13]. The time of the arrival of the Proto-Malay nation in Indonesia was the Neolithic era, when the people had become farmers and ranchers with permanent dwellings such as houses or huts, could rub tools from stone until smooth, make good pots, and also spin and weave materials [12].

In Yunnan, rice cooked using bamboo is usually made by minority tribes. There is a story that people who went

to farming or hunting in the mountains overcame the difficulty of making food by using bamboo as a place to cook. They put rice and water into the bamboo segments then burn it near the open fire until cooked [14].

The Deutero-Malay came to the Indonesian mainland after Proto-Malay between 300 and 200 BC [12] from South China, passed through Thailand and Malaysia, and then spread along the Indonesian coastal area [15]. The Deutero-Malay people already had a culture at the level of the metal age, when people were able to make equipment from iron [12].

The Proto-Malay and Deutero-Malay are groups of people who use Austronesian languages [10]. The tribes that exist in Indonesia today originate from one family, namely Malays, which are seen from their languages which are part of Malay-Polynesian or Austronesian language [12, 16]. This race later became a native of Melaka Peninsula (Malay) and the islands of Southeast Asia [17].

Bakry, a culturalist of Minang, said that *lemang* was first known by the people of Minangkabau thanks to the teachings taught by *ulama* named Sheikh Burhanuddin according to the beliefs of the Minang people, especially the people in Pariaman, West Sumatra. In the past, Sheikh Burhanuddin often visited houses of people in Minangkabau to establish friendship and share the teachings of Islam. Although the teachings of Islam had developed in Minangkabau, Sheikh was still welcomed with food that was considered haram according to the teachings of Islam, such as pork curry, rat *rendang*, and fried snakes [11].

The habit of Minang people of using the same cooking tools to cook all kinds of food including haram food caused Sheikh Burhanuddin introduce a way to make *lamang* so the people would no longer use cooking utensils that had been used previously [18]. At that time, Sheikh Burhanuddin cooked rice in a bamboo segment that had not been touched by anyone. The bamboo was lined with banana leaves in order to prevent the rice from sticking to the bamboo. The bamboo that had been filled with rice was burned until cooked near the open fire made using firewood [11].

The process of cooking *lamang* was imitated by people who saw and listened to the explanation of Sheikh Burhanuddin [11]. According to Bakry, a culturalist, the attachment of the teachings of Sheikh Burhanuddin to the culture of the Minang people in carrying out Islamic religious activities caused the activities of making *lamang* which known as *malamang* become a habit that is done every several days before Islamic religious celebrations as well as other traditional events in Minangkabau. This tradition then continued to expand to other regions in Indonesia and abroad. This was presumably due to the nature of Minangkabau people who like to wander and trade [11].

However, the ancestors of Sheikh Burhanuddin are known to have originated from the Guguak Sikaladi located in Pariangan Subdistrict, Tanah Datar District, West Sumatra, which is the oldest and first country of Minangkabau people [19]. According to Graves (2007), the people of Minang were once a Deutero-Malay society who migrated from the mainland of South China to east of the island of Sumatra, along the Kampar river to *darek* (highlands) which became the home of Minangkabau people [20]. Therefore, it is assumed that Sheikh Burhanuddin already knew the method of cooking rice using bamboo because it was inherited from generation to generation by Deutero-Malay people who were the ancestors of the Minangkabau people.

Tapai

There is no information about how *tapai* (or *tape*) can be a companion menu for *lemang*. However, *tapai* itself was also allegedly found first by the Proto-Malay people. The word *tapai* originated from Proto-Malay-Polynesian “*tapay*” or Proto-Austronesian “*tapa*” which means “fermentation” [21].

As discussed earlier, the Proto-Malay people came from Yunnan Province, South China. The fermentation process itself is believed to be first discovered in China to preserve cereals and legumes [22]. The first discovery of alcoholic drinks made from rice, fruit, and honey is found in the village of Jiahu originating from the Neolithic era 7000–6600 BC [23].

Hesseltine (1983) reported that there was a food similar to *tapai* in China called *lao chao*. The process of making *lao chao* is the same as *tapai*, starting with soaking glutinous rice in water overnight and steaming it until soft. After the sticky rice being cooled at room temperature,

Chinese yeast powder is then added into the rice and the rice is fermented for 2 days. Just like *tapai*, *lao chao* is also semiliquid, tastes sweet and alcoholic [6].

The philosophy of *lamang* and *tapai* in Minangkabau

In Minangkabau, *lamang* (Fig. 2) is a food that must be present at certain times in West Sumatra, such as Eid (Eid al-Fitr and Eid al-Adha), commemoration of the Maulud Prophet, death anniversary, and *baralek* (wedding party). A few days before these times take place, people gather together to do *malamang*. There is also *bulan lamang* (few days before Ramadan), when people do *malamang* together [11].

There is no symbolic meaning behind the presentation of *lamang* and *tapai* in traditional ceremonies of Minangkabau people. However, some Minang people feel that *lamang* is incomplete if not consumed together with *tapai* in terms of taste. They likened *lamang* and *tapai* to a man and a woman. Man without woman or vice versa is considered imperfect like *lamang* without *tapai* [24].

On the other hand, Bakry also said that *lamang* itself symbolizes the closeness of the friendship relations of Minang people who complement each other. This can be seen from the rice grains which are sticking together and coconut milk as a complement in making *lamang* so the taste becomes savory. Moreover, *malamang* tradition itself, which is done together with lots of people, already shows the togetherness of the Minang people.

There are taboos that are believed by the people of Minang in making *lamang* and *tapai* which should not be violated. The bamboo that will be used to make *lamang* should not be stepped over because it is believed to cause *lamang taju-lua* (rice coming out of bamboo when *lamang* is being



Fig. 2 *Tapai* poured on *lemang*. This kind of dish can be easily found in West Sumatra. *Lemang* is sometimes sold separately from *tapai*. Some people feel unsatisfied if *lemang* is consumed without *tapai*. Generally, people are excited to find this dish during the holy month of fasting

cooked). Meanwhile, in making *tapai*, people who spread *ragi* to sticky rice must have done *wudu* (the procedure to clean ourselves by washing our face, hands, head, and feet with water) first and *tapai* should not be made by woman who is menstruating. Sticky rice is believed not to be fermented into *tapai* if these two things are violated [25].

There is also an allusion about *lamang tapai* that describes how a man and a woman should behave in a relationship. *Lamang tapai* which is usually made by Minang women should not have gravel. Gravel is believed to be a symbol of harm, because gravel in glutinous rice will hurt people if they are bitten when *lamang* and *tapai* are consumed [24].

The presence of gravels on *lamang* or *tapai* is likened to the destruction of life of a man and a woman because they engage in intercourse outside of marriage. Woman is usually more humiliated than man. They are no longer accepted in the community and are considered a disgrace in the family. The community usually will do eviction as a social sanction [24].

Presentation of *lamang tapai* on traditional ceremonies in Minangkabau

Manjalang mintuo

In the tradition of the Minangkabau people, *lamang tapai* was used as a gift from a daughter-in-law when visiting her in-laws [11] (Fig. 3). *Lamang tapai* is considered as a tool for a daughter-in-law to communicate about her household life to her in-laws. In-laws assess the harmony of the relationship between their son and daughter-in-law by tasting the taste of *lamang* and *tapai* given by the daughter-in-law [24].

The tradition of visiting in-laws and delivering food (usually includes *lamang tapai*) from the daughter-in-law to the in-law or between families is usually done in the month of Ramadan. The tradition of delivering food to the in-laws is called *pengantaran* [26], and the tradition of visiting in-laws is called *manjalang mintuo* [27].

Asnan, a historian who is also a Minang people, also said that woman who brings *lamang* when visiting her parents-in-law will be more appreciated, because hard work and patience are needed in the process of making *lamang* which requires a long time and a lot of energy. However, based on Yulia (2010), newly married women now do not bother to make *lamang tapai* and prefer to bring ready-to-eat foods to the homes of their in-laws, while in-laws are also happier if they do not know the problems that affect the family of their son, especially the feelings of their daughter-in-law.

Manjapuik marapulai

Lamang tapai is also served at the *manjapuik marapulai* ceremony [25], the procession of picking up grooms to do the marriage agreement with the bride at the mosque or the bride's house and to be juxtaposed with the bride in a bridal bed at the bride's house. After marriage agreement in mosque, the bride and groom return to their own parents' homes even though they have legitimately become husband and wife [28, 29].

The man who had just gotten the status of a husband could only go to his wife's house after the wife's family group picked up the husband to be juxtaposed with his wife at her home according to the prevailing customs. The next day after marriage agreement event, *ninik*



Fig. 3 *Manjalang mintuo* tradition in Minangkabau. A tradition which a daughter-in-law brings food to visit her in-laws. This event is held not long after the wedding ceremony and every Islamic holiday, such as Eid al-Fitr and Eid al-Adha. Such tradition is held to strengthen the relationship between in-laws and daughter-in-law. *Lamang tapai* becomes a food menu that must be carried on this tradition as a gift for in-laws. Source: marimembaca.com

mamak (traditional ceremony leader), *urang sumando* (brother-in-law), and *bundo kanduang* (married woman) from the bride's family pick up *marapulai* (groom) to be juxtaposed on the bridal bed [28] (Fig. 4).

At this event, the family group of *anak daro* (the girl/bride) came to the house of *marapulai* and bring betel leaves and areca nuts in *carano* (ornamental and footed brass bowls, Fig. 5) as a sign of well-mannered presence (according to custom), complete groom outfit, yellow rice with *singgang* chicken, side dishes, cakes, and fruits [30]. For example, in Bayur village of Tanjung Raya Maninjau Regency, the family group of the bride brings *jamba gadang* (Fig. 6) to the family house of *marapulai*.

Every *jamba gadang* consists of one bowl of rice covered with leaves, then on top of it, there is a plate filled with *lamang*, *galamai*, and *kalio* meat which are also covered with leaves, then there are complementary foods such as *pindang* or *pangek* fish, one bowl of *gulai cubadak*, *perkedel*, *pinyaram*, sponge cake, and banana beside the rice bowl. Everything is arranged on a tray and covered with a serving hood and *dulamak* (cloth with gold embroidery) [28].

After *sambah manyambah* process (speech to convey the intention of the arrival of the bride's family) in the house of groom's family, all items brought by the bride's family were handed over to the groom's family and the groom is paraded to the house of the bride to be juxtaposed in the bridal bed [29]. After

that, food and drinks will be served to the attendees. At that time, *lamang* and *tapai* will be served as a dessert [25].

The flavor features of *lemang* and *tapai* from scientific perspective

Lemang

Lemang has a pleasant aroma. There have been no studies of compounds that give aroma to *lemang*. However, the main ingredients of making *lemang*, such as bamboo, banana leaves, coconut milk, and sticky rice, are known to contain volatile compounds that contribute to producing a distinctive aroma of *lemang*.

Bamboo of *lemang*

The bamboo used to make *lemang* is *Schizostachyum brachycladum* [31]. Nineteen volatile compounds were found in *S. brachycladum* which are predominantly coumaran (22.1%) and α -elemol (21.1%) of the total essential oils contained (4.9%) [32].

Banana leaves

The leaf that is most often used as a wrapper for traditional Indonesian food is the leaf of the kluthuk banana plant or *Musa balbisiana Colla*. There have been no studies of volatile compounds contained in kluthuk banana leaves that are burned. However, 26 kinds of volatile compounds were found in this type of fresh banana leaf with 2,4-bis-(1,1-dimethylethyl)-



Fig. 4 An example of the *manjapuk marapulai* procession. The groom will be picked up by the family of the bride to be brought to the house of the *anak daro* (bride) to be juxtaposed in the bridal bed. This ceremony shows that the marriage proposal in Minang custom is done by the bride's family towards her husband candidate. In this procession, the family of the bride wore traditional clothes and brought important items to the groom's house. Important items are carried using *carano* and tray that are covered with special cloth. Source: mahligai-indonesia.com



Fig. 5 *Caranos* to carry betel leaves and areca nuts which are covered with *dulamak* for the *manjapuik marapulai* ceremony. This vessel is made from brass metal. It is used as a marriage requirement. Bitter and sweet taste of betel leaf is a symbol of human hope and wisdom in responding their weaknesses. Weakness or irregularities that exist will not be gossip, while the sweet things in the meeting will be remembered forever. Source: mahligai-indonesia.com

phenol as the dominant compound. The number of volatile compounds in this type of banana leaf increased to 60 kinds after being steamed. The dominant volatile compound of the leaf after being steamed is tetradecan [33].

Coconut milk

Coconut milk is a thick white liquid extracted from old coconut meat. Traditionally, coconut milk is obtained by pressing the grated coconut meat with or without the addition of water [34]. The saturated fatty acid content of coconut milk is very high (89–91% without the addition of water) [35], which cause *lemang* to be greasy. The distinctive aroma of coconut in coconut milk comes from 14 volatile compounds which are predominantly tetracontane and 2-hexanol [36].

Glutinous rice (*Oryza sativa* var. *glutinosa*)

White sticky rice which is the main ingredient of *lemang* itself also arouses aromas derived from 22 main volatile compounds which are predominantly hexanal [37]. The sticky texture of *lemang* is caused by the starch structure of glutinous rice. Starch consists of two fractions, namely amylose and amylopectin. The higher the amylopectin or the lower the amylose content in rice will make the rice texture stickier. Amylose content of glutinous rice is only 1–2%, while rice in general which is found in ASEAN countries contains 13–25% amylose [38].

Tapai ketan

Tapai ketan is famous for its sweet, sour, and alcoholic taste. Sweet taste of *tapai* comes from the addition of table sugar in the process of making *tapai* and simple sugar content which is the result of the saccharification process. Saccharification is the process of breaking complex sugars into simple molecular sugars by glucoamylase enzyme produced by amylolytic microorganisms such as *Amylomyces rouxii*, *Endomycopsis burtonii*, and *Endomycopsis fibuligera* found in *ragi tape* [7, 39–41].

On the other hand, the alcohol content in the *tapai* is the result of solving simple sugars with the zymase enzyme produced by *Saccharomyces cerevisiae* found in yeast [42]. According to Najib (2017), there are seven types of alcoholic compounds in *tapai* which are fermented using banana leaves as a container for 3 days [43]. The dominant alcohol compounds are ethanol and 3-methyl-1-butanol. Meanwhile, a little sour taste comes from lactic acid which is the result of lactic acid bacteria (BAL) fermenting simple sugars. Lactic acid bacteria found in *ragi tape* are *Streptococcus faecalis*, *Lactobacillus plantarum*, and *Pediococcus pentosaceus* [44, 45].

Conclusion

Lemang and *tapai* are thought to have been found since the Neolithic era by the Proto-Malay people. *Lemang* is often served at religious and traditional ceremonies of Minangkabau because it has become a habit of the



Fig. 6 Women carrying *jamba* on their head for *makan bajamba* event. *Makan bajamba* is the tradition of eating together on various traditional ceremonies and Islamic feast days. At the wedding ceremony, the family of the bride is the one who must bring this *jamba* to the groom's house. *Jamba* is a term for foods that is neatly arranged on a tray and covered with *dulamak*. Foods that must be brought are rice, *lemang*, meat, fish, cakes and fruit. Source: wikipedia.org

Minang people to serve it. The tradition of making *lemang* (*malamang*) itself is accustomed to being carried out every several days before the celebration of Islamic holidays because famous ulama named Sheikh Burhanuddin taught how to make *lemang* while visiting people's homes to teach Islam.

Some Minang people often feel *lemang* is incomplete if it is not eaten together with *tapai*, so both are considered as one food called *lamang tapai*. There are several taboos that must be obeyed in making *lemang* and *tapai*. *Lemang* and *tapai* are also used as gifts when visiting other people's homes, for example, when visiting in-laws

or *manjapuik marapulai* ceremony. *Lemang* has a distinctive aroma derived from volatile compounds contained in its ingredients, while the sweet, sour, and bitter taste of *tapai* comes from the product of the breakdown of complex sugars from sticky rice by microorganisms found in yeast tape.

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