**Bakera: Tradition of medicinal plants utilization for therapy, prevention and recovery of diseases in Jailolo Sultanate custom society, Indonesia**

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**Abstract.** Syahdar SA, Tamalene MN, Hasan S. 2019. Bakera: tradition of medicinal plants utilization for therapy, prevention and recovery of diseases in Jailolo Sultanate custom society, Indonesia. Asian J Ethnobiol 2: 8-14. Indonesia is well-known as the source of tropical plants that are very useful for treating various diseases. In addition, there are also various traditional knowledge of herbal utilization in many societies. The people of eastern part in North Maluku Utara Province, the Jailolo Sultanate Society of Halmahera Island, which consists of four original tribes: Gamkonora, Tobaru, Sahu, and Wayoli, still use traditional medicine to treat diseases. Their tradition called “Baker” is similar to the ‘Spa’ in modern urban societies. Bakera as one of local geniuses in medical field has become entrepreneurial interest, especially for those running the spa business. Medically, plants used in Bakera have been proven to have positive effects on health. This data may enrich other data on the wealth and diversity, as well as knowledge on medicinal plants of Indonesian communities. The research used emic and etic approaches. Data was analyzed descriptively, data presentation, data reduction and data verification, data validity check. Informants of the research were eight people, selected using Purposive Sampling Technique. Bakera can be used in postpartum treatment as well as to treat sore, malaria and liver. As a whole, the use of nine different plant species for Bakera consists of medicinal and spice plants. There are three plant species found that often cultivate in the yard. Bakera has thermotherapy and aromatherapy effects that contribute to Bakera effectiveness. Thermotherapy could pacify muscle tension, lose weight, increase blood circulation, reduce tension headache, autoimmunity, and relaxation. In addition, plants used have immunostimulant, antiseptic, and antiphlogistic effects.

**Keywords:** Bakera, ethnic, Gamkonora, Halmahera, medicinal plants, Sahu, Tobaru, Wayoli

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**INTRODUCTION**

Societies in developing countries are highly relied on local natural resources, including especially wild medicinal plants, to fulfill their needs on daily basic health treatment (Quave and Pieroni 2014). The diversity of traditional medicine is due to the diversity of human societies, languages, as well as cultures, combined with local ecological diversity Novy (1997); Ndoye and Eybe (1997).

Utilization of medicinal plants has been practiced done by many ethnic communities in Indonesia. Each ethnic has its own knowledge on how to make use of various medicinal plants. This is a priceless asset, especially for the development of medical and pharmaceutical industry (Noorhayati 2012). In human civilization, plants as medicine materials have been utilized since the era of gathering. It is inherited from previous generations and lasts until present day, practiced by modern society. Local knowledge is every generation’s heritage. This knowledge is usually owned by those called as traditional healer (the hattra) who considered as being consistent in preserving and practicing local knowledge on how to utilize various plants to create many traditional potions. However, many rural societies have now been more familiar with modern medication and chemical medicines.

The growing interest in traditional medication cannot be separated from the growing complexity of diseases among societies, as well as the increasing health expenses. As a result, traditional medication becomes one of the alternatives by people who looking for solving those problems.

Supported by available natural resources, as well as inherited knowledge of traditional medication, the interest keeps growing among the Jailolo Sultanate indigenous society in Halmahera Island, North Maluku Province, Indonesia. Among methods in traditional potion processing used by people including squeezed, fresh-consumed, boiled, mashed, and vaporization. Jailolo Sultanate indigenous society uses herbal material both in fresh condition, as well as after being dried.

There are two ways of processing medicine from plants, either boiled and squeezed or mashed. While there are three ways of serving it: drink it, rub it on body, or wash it with water. Drinking potion is usually a treatment for inner body part diseases, while the other two are for outer body part treatments (Kusuma and Zaky 2005).

One unique method of traditional herbal medication practiced by the Jailolo Sultanate indigenous society is the Bakera or vaporization. Bakera is a treatment commonly used by four ethnicities under the Jailolo Sultanate, namely...
Gamkonora, Tobaru, Sahu, and Wayoli, who live in West Halmahera Regency, North Maluku Province. This is the most common treatment for women to keep them fit and fresh during their post-maternal phase. Its method is similar to sauna and uses aromatic herbs.

Sukenik et al. (1999) stated that sauna is good for blood circulation. Minerals contained in the potion penetrates through the skin pores. Sauna has many therapeutic functions including decrease blood pressure, improve lung function, ease asthma and bronchitis, relief pain, as well as improve joints mobility in rheumatic treatment (Hannuksela and Ellahham 2001). Sauna is also good for respiration system, cardiac disease, hypertension, depression, pain reliever, auto-immunity, as well as relaxing fatigue (Crinnion 2011). Sauna is good as a relaxation method since it can improve blood circulation and relieve pain. Aroma of the herbal potion used in sauna can also deliver a sedative effect (Taavoni et al. 2013).

Essential oil contained in plants used in sauna could evaporate, thus can stimulate memory and emotional response. Apart inside the brain, called the hypothalamus will deliver messages through the whole part of the body, which in turn would be converted to actions in the form of releasing particular compounds that can make our body become relaxed. Relaxation can make the muscle become relax as well, thus reduces the production of adrenaline hormone, which in turn decreases blood pressure (Werdyastrli et al. 2014).

Aromatherapy from essential oils can easily infiltrate into blood circulation and then excreted through urinal system or exhalation (Maddocks-Jennings and Wilkinson 2004). Aromatherapy can treat diseases, balancing and relaxing our body, mind, and soul, as well as stimulating the body immune system to cope with various health problems, such as respiratory diseases, gastroenteritis disease, neural disorder, as well as infection of bacteria and fungus (Alexander 2002; Reichling and Saller 2003, Suwanti et al. 2018).

Inhaling aromatherapy is considered as the fastest and most direct healing method. That is because the easy-to-evaporate-molecules of essential oil directly react to olfactory organs, and then resulting in brain perception (Sustram 2004).

Utilization of medicinal plants is a long-lasting tradition. Traditional knowledge or local genius of Jailolo Sultanate indigenous society in utilizing natural resources, especially medicinal plants, is a cultural treasure that needs to be preserved. As such, Indonesian authentic knowledge will not be eliminated from civilization, and so the medicinal plants will be used as, the way of utilization by the Jailolo Sultanate indigenous society. The research aims to discover traditional knowledge of Jailolo Sultanate indigenous society in utilizing medicinal plants to prevent (preventive), treat (curative), and recover (rehabilitative) diseases.

**MATERIALS AND METHODS**

The research was conducted from March to November 2018 at three sub-districts in West Halmahera Regency areas, North Maluku. Four villages were selected of the three sub-districts (Figure 1).

The research used a qualitative method with phenomenology approach using semi-structured interview, observation, and documentation. Informants were selected through purposive sampling (Figure 2).

![Map of the study area in Jailolo, West Halmahera Regency, North Maluku Province, Indonesia](image)
The Informants of the research were eight people. The selection was based on 1) healing period/level of healing practice to represent level of skill and knowledge; 2) knowledge on medicinal plants utilization, and; 3) already have pupils that will inherit their knowledge. Besides becoming a hattra (traditional healer), informants also peasants. Informants from the Gamkonora Ethnic reside in Gamkonora Village, South Ibu Sub-district. Informants from the Sahu Ethnic reside in Lolori Village, Jailolo Sub-district, while. Informants from the Tobaru Ethnic reside in Todowongi Village, Jailolo sub-district, informants from the Wayoli ethnic reside in Peot Village, Sahu Sub-district. All of them are still practicing traditional medication in their daily life. Informants age is between 51 and 70 years old with an average level of education is not graduated from elementary school (only one informant who is a high school graduate).

Each informant was asked for information concerning medicinal plants, as well as their utilization and processing method practiced. The identification of plants used in medication was made directly on the field. The identification process was based on plant’s morphological characteristics (root, stem, leaf, flower, seed, and fruit). Plant identification method used plant identification guidebook by the Medicinal Plants Center. As for unidentified plant’s will be identified by matching plants’ organs with determination keys using a book by Steenis (2008). Results were analyzed descriptively by presenting data in form of figures and tables. Results are analyzed by data presentation, data reduction, data verification, and data validity check. Map of the research location can be seen in figure 2.

Figure 2. Assignment of Research Informants

Figure 3. Common process of Bakera
RESULTS AND DISCUSSION

The Jailolo Sultanate indigenous society has an authentic traditional medical treatment method called the Bakera. Bakera is a traditional way of steam-bathing using the medical plants for healing, recovery, and preventing diseases. The word ‘Bakera’ is derived from Minahasa language of Sulawesi Utara (North Sulawesi), firstly explained by Watuseke in 1970 (Watuseke 2014). Bakera tradition can be considered as the “Spa” (Salus per aquam) as in modern societies. In local medication, knowledge of healing, prevention, and recovery using medicinal plants is inherited hereditarily. From the medical aspect, medicinal plants used in Bakera are proven to have a positive effect on health which supports the immune system of the body. Bakera as one of local knowledge in medical practices in North Maluku has attracted entrepreneurial interest. Generally, the method used in Bakera presented in Figure 3 and Bakera process documentation can be seen in Figure 4.

Body treatment is important, not only for women, but also for men. The women of Jailolo Sultanate indigenous society have been doing the Bakera for generations. This treatment is especially done by those who just give birth to a baby (three or four weeks after giving birth). Yet, Bakera is not only done for post-maternal treatment but also formany kinds of disease (Table 1).

<table>
<thead>
<tr>
<th>Ethnic</th>
<th>Disease treated using Bakera method</th>
<th>Potion making method</th>
<th>Serving/applying method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamkonora</td>
<td>Liver disease</td>
<td>Provide 17 handfuls of clove leaves, 17 handfuls of nutmeg leaves, a piece of dried banana leaf, and 20cm of mangosteen bark.</td>
<td>Drink a half glass of boiled potion water, and put the rest under a perforated wooden chair. Patient sit naked on the chair, covered by a piece of blanket, so that his/her whole body will be exposed by the hot steam coming from the boiled potion. The treatment can be done once a week until the patient feels recovered.</td>
</tr>
<tr>
<td>Post-maternal treatment</td>
<td>Provide 20 handfuls of clove leaves, wash clean; 20 handfuls of nutmeg leaves, 1 dried banana leaf, 20cm of mangosteen bark.</td>
<td>Place the boiled potion under a perforated wooden chair. Patient (the mother) sits naked on the chair, covered by a piece of blanket, so that her whole body will be exposed by the hot steam that comes from the boiled potion. The treatment is done twice a day (in the morning and in the afternoon) for a month. The treatment can be applied one month after giving birth.</td>
<td></td>
</tr>
<tr>
<td>Treatment of Malaria</td>
<td>Provide 17 handfuls of clove leaves, wash clean; 17 handfuls of nutmeg leaves, 1 dried banana leaf, and 30 cm of langsat fruit bark.</td>
<td>Place the boiled potion under a perforated wooden chair. Patient sit naked on the chair, covered by a piece of blanket, so that his/her whole body will be exposed by the hot steam that comes from the boiled potion. Bakera is practiced in the morning and in the afternoon until the patient sweating. Treatment is done after the patient recovered from the disease.</td>
<td></td>
</tr>
<tr>
<td>Sahu</td>
<td>Post-maternal treatment</td>
<td>Provide 17 handfuls of clove leaves, wash clean; 17 handfuls of nutmeg leaves, 1 dried banana leaf, and 30 cm of langsat fruit bark.</td>
<td>Place the boiled potion under a perforated wooden chair. Patient (the mother) sits naked on the chair, covered by a piece of blanket, so that her whole body will be exposed by the hot steam that comes from the boiled potion. The treatment is executed twice a day (in the morning and in the afternoon) for a month. The treatment can be performed one month after giving birth.</td>
</tr>
<tr>
<td>Tobaru</td>
<td>Post-maternal treatment</td>
<td>Provide 17 handfuls of clove leaves, wash clean; 17 handfuls of nutmeg leaves, 1 dried banana leaf, 30 cm of langsat fruit bark.</td>
<td>Place the boiled potion under a perforated wooden chair. Patient (the mother) sits naked on the chair, covered by a piece of blanket, so that her whole body will be exposed by the hot steam that comes from the boiled potion. The treatment is executed twice a day (in the morning and in the afternoon) for a month. The treatment can be performed applied one month after giving birth.</td>
</tr>
<tr>
<td>Wayoli</td>
<td>Relief pain</td>
<td>Provide 17 handfuls of clove leaves, wash clean; 17 handfuls of nutmeg leaves, 1 dried banana leaf, and 30 cm of mangosteen bark.</td>
<td>Place the mixture under a hollow wooden chair. Patient sits naked on the chair, covered by a piece of blanket, so that his/her whole body will be exposed by the hot steam that comes from the boiled potion. The treatment can be done once a week until the patient feels recovered.</td>
</tr>
</tbody>
</table>
**Bakera** uses potions made from medicinal plants that are good for disease medication, recovery, and prevention as well as producing unique fragrant. The research found eight of plant used in the **Bakera**, from spices to seashore bushes. A complete list of plants used as the ingredients of **Bakera**, along with their local and scientific name, habitus, parts, and family presented in Table 2. All parts of medicinal plants are basically haves medical efficacy. However, the most commonly used part is the leaf, which takes the portion of 75% of all parts used (Figure 5). It is not hard to find those plants in the backyard of home of Jailolo Sultanate indigenous society, since most of their nearly cannot be separated from those plants. It is just like plants for food and living.

**Bakera** or traditional sauna that uses medicinal plants explained in detail for the first time by Zumsteg and Weckerle (2007). Steam-bathing using many kinds of medicinal plants is a traditional method practiced by the people of North Sulawesi, particularly done by post-maternal mothers. indigenous society believes that steam-bathing delivers positive effect and relax the body, improve blood circulation, as well as reduces body weight. **Bakera** is applied one month after giving birth. This is because according to belief of Jailolo Sultanate indigenous society, a mother who just gave birth to a baby has an ‘immature’ body and would not be strong enough to take a **Bakera** treatment. That is why it is performed one month afterward. This method also expected to make the body become fits and healthy.

For Jailolo Sultanate indigenous society, the benefit of **Bakera** is not only can be felt physically, but also mentally by their mind. These people said that after taking **Bakera**, their body feels more relax and fragrant. They feel comfortable and their mind also becomes more relaxed. **Bakera** is considered as able to cure, prevent, and recover particular disease. According to Taavoni et al. (2013) steam-bathing is good for relaxation, since it can improve blood circulation and relieve pain.

### Table 2. Plants used in **Bakera**

<table>
<thead>
<tr>
<th>Family</th>
<th>Local Name</th>
<th>Commercial Name</th>
<th>Scientific Name</th>
<th>Habitus</th>
<th>Part(s) used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asteraceae</td>
<td>Cinga -cinga</td>
<td>Sea daisy</td>
<td><em>Melanthera biflora</em> L. Wild</td>
<td>Bush</td>
<td>Leaf</td>
</tr>
<tr>
<td>Caricaceae</td>
<td>Pupaya</td>
<td>Papaya</td>
<td><em>Carica papaya</em> L.</td>
<td>Tree</td>
<td>Leaf</td>
</tr>
<tr>
<td>Clusiaceae</td>
<td>Mangustan</td>
<td>Mangosteen</td>
<td><em>Garcinia mangostana</em> L.</td>
<td>Tree</td>
<td>Bark</td>
</tr>
<tr>
<td>Convolvulaceae</td>
<td>Lolo</td>
<td>Bayhops</td>
<td><em>Ipomea pes-caprae</em></td>
<td>Bush</td>
<td>Leaf, stem</td>
</tr>
<tr>
<td>Meliaceae</td>
<td>Lansa</td>
<td>Langsat</td>
<td><em>Lansium domesticum</em></td>
<td>Tree</td>
<td>Bark</td>
</tr>
<tr>
<td>Musaceae</td>
<td>Pisang</td>
<td>Banana</td>
<td><em>Musa textilis</em></td>
<td>Tree</td>
<td>Leaf</td>
</tr>
<tr>
<td>Myristicaceae</td>
<td>Pala</td>
<td>Nutmeg</td>
<td><em>Myristica fragrans</em> Houtt.</td>
<td>Tree</td>
<td>Leaf</td>
</tr>
<tr>
<td>Myrtaceae</td>
<td>Cengkeh</td>
<td>Clove</td>
<td><em>Syzygium aromaticum</em></td>
<td>Tree</td>
<td>Leaf</td>
</tr>
</tbody>
</table>

Figure 5. Proportion of medicinal plants’ parts used in **Bakera**
The Jailolo Sultanate indigenous society also said that the medicinal plants used, as well as the vaporization in Bakera can prevent diseases. Medicinal plants boiled and inhaled by the Bakera patient act like medicine for their body. During the vaporization, patient’s body produces sweat. They believe that sweat brings out poisons from inside their body. That is why they feel healthier and fresher after taking Bakera.

Utilization of medicinal plants in Bakera provides particular effect. The Bakera used plants from the family of Asteraceae (Sea daisy), Myrtaceae (Clove), Convolvulaceae (Bayhops), Meliaceae (Langsat fruit), Clusiaceae (Mangosteen), Myristicaceae (Nutmeg), Caricaceae (Papaya), Musaceae (Banana). Almost all of the ingredients have good effects on disease medication, prevention, and recovery. The efficacy of plants as presumed by the local society is nearly similar to what has been clinically tested. Studies have been conducted on some of those plants and reported on international journals, such as clove, nutmeg, seahops, papaya, mangosteen, langsat, and banana.

Secondary metabolite compounds contained in clove leaves act as an antibacterial agent (Nanan 2004). The main content of clove oil is eugenol, eugenol acetate, and caryophyllene. Eugenol compound is a major component in clove flower essential oil that has antioxidant, antifungal, analgesic, and anti-septic activities. Clove oil has a special taste and aroma favored by many people. In addition, the oil has stimulant, anesthetic, carminative, antiemetic, antiseptic, and antispasmodic nature (Altman and Marcussen 2001; Nanan 2004; Kumala 2008).

Methanol extract from nutmeg leaves contains alkaloid, flavonoid, terpenoids, and tannin compounds. While the ethyl acetate extract contains flavonoid compound that can be used as an antioxidant and antibacterial. It also has an antifungal activity against Candida albicans. Nutmeg leaves’ acetyl extract has an antibacterial activity against S. aureus and E. coli (Ginting et al. 2017). Essential oil contained in nutmeg is approximately 5-15% consisting of pinene, sabine, camphene, myristicin, elemicin, isoelemicin, eugenol, isoegenol, methoxyeugenol, safrole, dimeric polypropenoate, lignin, and neolignan (Janssens et al. 1990; Sonavane et al. 2001). According to Orita et al. (2003), one of important components in nutmeg fruit is the myristicin that has a hepatoprotector activity.

Contents of plant langsat that are medically beneficial include essential oil, saponin, tannin, and organic acid. Venkateshappa and Sreenath (2013) suggested that the contents ofansat can be used as pain reliever, antifungal, anti-inflammatory, tonic, and infection prevention. Phytochemical screening done by Poeoegan and Praptiwi (2010) on mangosteen shows alkaloid, tannin, phenolic, flavonoid, and triterpenoid compounds. Those compounds are known as having the antibacterial nature. The extract of dry banana leaf contains secondary metabolite compound of tannin, phenol, and flavonoid (Putra 2014). Tannin is one of free radical predators (Kumari and Jain 2012).

Papaya leaves is known as containing vitamins such as vitamin A, C, and E, as well as alkaloid as the main antioxidant (Fitria et al. 2013). Antioxidant compounds can prevent damages caused by the free radical on normal cell, protein, and fat. Utilization of medicinal plants in Bakera provides special effects since they contain various kinds of secondary metabolite compounds. This compound is a bioactive substance related to the chemical contains of plants. Secondary metabolic is only found in specific organisms and only produced under particular conditions (Sudha and Ravishankar 2002).

Generally, secondary metabolite compound has an activity and function as a protector for the plant against pest for the sake of the plant itself and the surrounding environment. Chemical compound as the result of secondary metabolite has been broadly used as a dye, poison, aroma, food, medicines and so on (Hayati and Fasyah 2010).

Essential oil content in Bakera ingredients will evaporate and stimulate memory and emotional responses. A part of brain called hypothalamus will deliver messages to the body that will be converted to actions in form of unleashing compounds that can make the body become relaxed. Relaxation can make muscles become relaxed as well. This condition will decrease the production of adrenaline, which eventually will be resulted in decreased blood pressure (Werdigastri et al. 2014).

Fresh plants are added into the hot water when the essential oil has evaporated. Essential oil concentration resulted from the vaporization process is high enough to induce physiological effect, both from inhalation and skin condensation on infected or inflamed perineum area (Boer et al. 2011).

Through evaporation, essential oil is inhaled and applied to the skin surface. At a high amount, it may also penetrated through women’s blood circulation (Bronaugh et al. 1990). Essential oil from plants used in Bakera supports the healing process, especially through tonic effect. It may also prevent infection since it contains antiseptic and antiphlogistic.

Through the evaporated potion, Jailolo Sultanate indigenous society communities believe that Bakera will immediately recover their stamina and health, improve blood circulation of post-maternal mothers as well as rejuvenate skin texture from wrinkles after pregnancy. Bakera also is believed as a detoxification method after giving birth. It has been reported that steam-bathing can deep-cleanse our skin, enhance body weight, improves blood circulation, enhance muscle recovery, relieve headache, and also be good for relaxation (Hannuksela and Ellahham 2001; Iwase et al. 2013; Crininn 2011).

In summary, traditional community of Jailolo Sultanate used nine types of medicinal plants for Bakera treatment, namely: Melanthera biflora L. Wild, Carica papaya L., Garcinia mangostana L., Ipomea pes-caprae, Lansium domesticum, Musa textilia, Myristica fragrans Houtt., and Syzygium aromaticum. These plants were used for treatment, recovery and prevention of diseases such as malaria, liver and sore, as well as for postpartum treatment using Bakera method. All plants used in the Bakera contained secondary metabolite compounds including eugenol, alkaloids, flavonoids, terpenoids,
tannins, phenolic, organic acids and vitamin, such as vitamin A, C, and E. The secondary metabolite compounds in *Bakera* plant were used as medicine to treat various diseases. *Bakera* effectiveness contributed to thermotherapy and aromatherapy effects; hence, it could pacify symptoms such as muscle tension, lose weight, increase blood circulation, reduce tension headache, autoimmunity, immunostimulant, antisepic, and antiphlogistic.

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**REFERENCES**


Putra AAB, Bogoriani NW, Diantariani NP, Sumawedi NLU. 2014. Ekstraksi zat warna alami dari bonggol tanaman pisang (*Musa paradisiaca* L.) dengan metode maserasi, refluks, dan sokletasi. Jurnal Kimia. [Indonesian]


