FOREST HERBAL TEA SHOULD BE PROMOTED IN INDONESIA

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Abstract

Forest herbal tea is made from plants in the forest area. Various types of plants, including trees, shrubs, and herbs, can be sources of forest herbal tea. Most of the forest herbal tea sources are wild plants found in natural forest areas in Indonesia. This means that Indonesia has abundant forest herbal tea resources, which should be promoted. However, the use of raw materials in forest herbal tea products is still limited. This review shows why forest herbal tea products should be promoted in Indonesia in terms of cultivation, standardisation, processing method, economic value, and diversity of products.

Keywords: Forest, Herbal Tea, Indonesia


INTRODUCTION

It is accepted that tea is the most popular beverage in the world after water. Tea beverages can be classified into conventional tea and herbal tea. Conventional tea is made by brewing tea plant leaves (Camellia sinensis). Meanwhile, herbal tea is defined as a beverage made by plants other than tea plants (Ravikumar, 2014). There needs to be more than this definition to describe herbal tea production in the beverage industry.

Herbal tea is a beverage made from a mixture of the leaves, branches, flowers, seeds, and the roots of various plants. Thus, the raw material source for herbal tea is more than just leaves, like in conventional tea. If the plants used for herbal tea production are made from forest plants, this beverage is called forest herbal tea (Triandini and Wangiyana, 2022).

Forest herbal tea consumption has recently increased in the global market. The data shows that forest herbal tea has a 4.5% market share with a 1.2 billion US dollar value in 2022 (Sukhava, 2022). This information can be the basis data for Indonesia, a country which is well positioned to obtain an advantage in the worldwide forest herbal tea marketplace (Xuetao, 2015). The exploration of these products can give several advantages to this country.

As a country with Asia's largest tropical forest area, Indonesia has abundant forest herbal tea sources. According to The Ministry of Environment and Forestry, Indonesia has 94.1 million hectares of forest area, which covers 50.1% of land area. This data means Indonesia likely has a large forest herbal tea material source that needs further exploration (Wangiyana and Triandini, 2021). However, the use of forest herbal tea commodities is much lower than other commodities in the forestry sector. Regarding the potency of this commodity to increase Indonesia's gross domestic product in forestry, forest herbal tea commodities should be promoted in Indonesia.

This mini-review will first demonstrate the potential source of forest herbal tea in Indonesia. Then, the extent to which forest herbal tea can give some advantages as a promising beverage product will be discussed.
FOREST HERBAL TEA SOURCE MATERIAL

Indonesia has various raw materials for forest herbal tea with a wide range of products. These products can be produced from various organs of plants, including leaves, flowers, rhizomes, seeds, and bark (Ravikumar, 2014). This means that different organ sources can produce different characteristics of forest herbal tea. There are some examples of these products: soursop herbal tea is made from its leaves, coffee herbal tea is made from its flowers, ginger herbal tea is made from its rhizome, avocado herbal tea is made from its seeds, and cinnamon herbal tea is made from its bark (table 1).

<table>
<thead>
<tr>
<th>No</th>
<th>Forest Herbal Tea Product</th>
<th>Plants species</th>
<th>Organ</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grapes Herbal Tea</td>
<td>Vitis vinifera</td>
<td>Fruit Peels</td>
<td>(Sagarigh, Suter and Yusasrini, 2021)</td>
</tr>
<tr>
<td>2</td>
<td>Coffee Herbal Tea</td>
<td>Coffea Sp.</td>
<td>Flower</td>
<td>(Supeno et al., 2020)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Leaves</td>
<td>(Daryanto, 2019)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fruit Peels</td>
<td>(Garis, Romalasari and Purwasih, 2019)</td>
</tr>
<tr>
<td>3</td>
<td>Soursop Herbal Tea</td>
<td>Annona muricata</td>
<td>Leaves</td>
<td>(Maharani, Setyobroto and Susilo, 2017)</td>
</tr>
<tr>
<td>4</td>
<td>Pandan Herbal Tea</td>
<td>Pandanus amaryllifolius</td>
<td>Leaves</td>
<td>(Phuoc et al., 2018)</td>
</tr>
<tr>
<td>5</td>
<td>Snake Fruit Herbal Tea</td>
<td>Salacca edulis</td>
<td>Furit Peels</td>
<td>(Ariansyah, 2016)</td>
</tr>
<tr>
<td>6</td>
<td>Curcuma Herbal Tea</td>
<td>Curcuma xanthorrhiza</td>
<td>Rhizome</td>
<td>(Moehady, 2015)</td>
</tr>
<tr>
<td>7</td>
<td>Muntingia Herbal Tea</td>
<td>Muntingia calabura</td>
<td>Leaves</td>
<td>(Sudarmanto, 2015; Tiyani, Suharti and Andriani, 2020)</td>
</tr>
<tr>
<td>8</td>
<td>Cinnamon Herbal Tea</td>
<td>Cinnamomum verum</td>
<td>Bark</td>
<td>(Bernardo et al., 2015; Mangala Gowri et al., 2017)</td>
</tr>
<tr>
<td>9</td>
<td>Aquilaria Herbal Tea</td>
<td>Aquilaria malaccensis</td>
<td>Leaves</td>
<td>(Adrianar, Batubara and Julianti, 2015; Karsiningsih, 2016)</td>
</tr>
<tr>
<td>10</td>
<td>Gyrinops Herbal Tea</td>
<td>Gyrinops versteegii</td>
<td>Leaves</td>
<td>(Samsuri and Fitriani, 2013; Wangiyana et al., 2018, 2021)</td>
</tr>
<tr>
<td>11</td>
<td>Cacao Herbal Tea</td>
<td>Theobroma cacao</td>
<td>Fruit Peels</td>
<td>(Kusuma, Putra and Darmayanti, 2019)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Leaves</td>
<td>(Supriyanto, Darmadi and Susanti, 2014)</td>
</tr>
<tr>
<td>12</td>
<td>Lemongrass Herbal Tea</td>
<td>Cymbopogon citratus</td>
<td>Stem</td>
<td>(Namibar and Matela, 2012)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Leaves</td>
<td>(Royhanaty, Mayangsari and Novita, 2018; Wangiyana et al., 2019)</td>
</tr>
<tr>
<td>13</td>
<td>Galangal Herbal Tea</td>
<td>Alpinia galanga</td>
<td>Rhizome</td>
<td>(Ding et al., 2019)</td>
</tr>
<tr>
<td>14</td>
<td>Turmeric Herbal Tea</td>
<td>Curcuma longa</td>
<td>Rhizome</td>
<td>(Bhowmik et al., 2009)</td>
</tr>
<tr>
<td>15</td>
<td>Clove Herbal Tea</td>
<td>Syzygium aromaticum</td>
<td>Flowers</td>
<td>(Mani et al., 2012)</td>
</tr>
<tr>
<td>16</td>
<td>Ginger Herbal Tea</td>
<td>Zingiber officinale</td>
<td>Rhizome</td>
<td>(Chao et al., 2011)</td>
</tr>
<tr>
<td>17</td>
<td>Betel Herbal Tea</td>
<td>Piper betle</td>
<td>Leaves</td>
<td>(Azam, 2018)</td>
</tr>
<tr>
<td>18</td>
<td>Strobilanthes Herbal Tea</td>
<td>Strobilanthes crispus</td>
<td>Leaves</td>
<td>(Bakar, Asmah and Othman, 2006)</td>
</tr>
<tr>
<td>19</td>
<td>Chrysanthemum Herbal Tea</td>
<td>Chrysanthemum indicum</td>
<td>Flowers</td>
<td>(Setiawati et al., 2019; Shahrajabian et al., 2019)</td>
</tr>
<tr>
<td>20</td>
<td>Mulberry Herbal Tea</td>
<td>Morus Sp</td>
<td>Leaves</td>
<td>(Killedar and Pawar, 2017; Larasati and Issutarti, 2017)</td>
</tr>
<tr>
<td>21</td>
<td>Mango Herbal Tea</td>
<td>Mangifera indica</td>
<td>Furit Peels</td>
<td>(Nanthachai, 2020)</td>
</tr>
<tr>
<td>22</td>
<td>Betel Nut Tea</td>
<td>Areca catechu</td>
<td>Seed</td>
<td>(Singh, 2022)</td>
</tr>
<tr>
<td>23</td>
<td>Mahogany Herbal Tea</td>
<td>Swietenia mahagoni</td>
<td>Seed</td>
<td>(Sukardiman et al., 2013)</td>
</tr>
<tr>
<td>24</td>
<td>Pirdot Herbal Tea</td>
<td>Saurauia bracteosa</td>
<td>Leaves</td>
<td>(Situmorang and Sunandar, 2019)</td>
</tr>
<tr>
<td>25</td>
<td>Papaya Herbal Tea</td>
<td>Carica papaya</td>
<td>Flowers</td>
<td>(Bergonio and Perez, 2016)</td>
</tr>
<tr>
<td>26</td>
<td>Hibiscus Herbal Tea</td>
<td>Hibiscus sabdariffa</td>
<td>Flowers</td>
<td>(Mckay et al., 2010)</td>
</tr>
<tr>
<td>27</td>
<td>Starfruit Herbal Tea</td>
<td>Averrhoa bilimbi</td>
<td>Leaves</td>
<td>(Rozi, Silvy and Syukri, 2022)</td>
</tr>
<tr>
<td>28</td>
<td>Rambusa Herbal Tea</td>
<td>Passiflora foetida</td>
<td>Leaves</td>
<td>(Nathanian, Putra and Sr Indian, 2020)</td>
</tr>
</tbody>
</table>
These forest herbal teas have different characteristics in terms of colour, aroma, taste and bitterness, attracting a wide range of consumers with different preferences (Willis et al., 2017). Consumer preference assay based on sensory evaluation revealed that the hedonic panellist, a consumer representative in the research scale, accepts forest herbal tea as a beverage with unique characteristics (Odoro et al., 2013). This data means that forest herbal tea products have an excellent prospect to be developed in Indonesia (Wangiyana, Triandini and Anita Nugraheni, 2021).

ADVANTAGES OF FOREST HERBAL TEA UTILIZATION

First of all, it could be argued that the information about the Forest Herbal Tea Plant source cultivation method still needs to be improved since most of these plants are classified as wild plants (Bester, Joubert and Joubert, 2014). However, as Bester and his team state, the raw material of forest herbal tea is mostly from wild plants that can grow naturally in a natural environment. This means that forest herbal tea plants do not need a particular cultivation method. (Güzel and Güzelsemme, 2018) state that wild plants as source material of forest herbs should not be difficult to cultivate because they are less demanding than crop plants (Wangiyana, Putri and Triandini, 2019). This indicates that the forest herbal tea cultivation method is promising to be developed with this advantage in mind (Wangiyana et al., 2022). Forest herbal tea source material is mostly from tree plants, which do not need special cultivation treatment like fertilizer (Triandini and Wangiyana, 2022). Furthermore, forest herbal tea source materials tend to resist pests and disease.

It has been argued that Forest Herbal Tea products require continued raw material standardisation. However, raw material standardisation of forest herbal tea will provide new pharmacological insights, leading to innovation (Poswal et al., 2019). One pharmacological insight is the various secondary metabolites with health benefits contained in forest herbal tea. Pharmacology in vitro study has revealed that forest herbal tea raw material has antioxidant, antimicrobial, anti-inflammatory, and anti-metastasis properties (Etheridge and Derbyshire, 2019). This indicates the prospect of consuming forest herbal tea products as alternative medicine. In addition, forest herbal tea products can also be consumed regularly to experience their health-beneficial effects. Thus, the standardisation of raw materials not only can make forest herbal tea a standardised beverage product but also a standard medical product (Kunle, Egharevba and Ahmu, 2012).

It could also be argued that forest herbal tea needs continued research into processing methods. The conventional tea processing method, which involves enzymatic oxidation as a critical issue, has been well-studied for comparison. Enzymatic oxidation in the tea processing method determines the type of tea product, whether it is black tea, oolong tea, or green tea (Deb and Jolvis Pou, 2016). However, Forest herbal tea production does not require enzymatic oxidation. This is because enzymatic oxidation of forest tea raw material does not significantly affect the type of products developed from it. Thus, the production is simpler and more efficient than conventional tea. Moreover, forest herbal tea production can be conducted without specialised equipment (Wangiyana and Triandini, 2022). This is because the primary raw material processing in forest herbal tea products involves drying and chopping, which can be conducted in a home industry. Therefore, forest herbal tea has promising potential to be developed on the home industry scale (Triandini et al., 2022).

It has been argued that forest herbal tea requires no promotion in terms of its economic potential. Conventional tea products have high economic value as one of the most popular beverages in the world. However, the economic feasibility data of forest tree products is expected to reveal a new income source for forest commodities (Wangiyana, Gunawan and Triandini, 2023). This is because forest herbal tea can give additional income to the farmer. Firstly, the raw material of forest tea is mostly not the primary harvesting target of the commodity. For example, agarwood's main commodity is resin, while agarwood leaves processed into forest herbal tea are the secondary commodity (Wangiyana and Sami‘un, 2019). Secondly, some raw materials for forest herbal tea are by-products of harvesting. For example, forest herbal tea can be produced from grape peel, snake fruit peel, mango, cacao, and coconut. Consequently, forest herbal tea can add value to waste, which has become a problem in the forestry sector (Karki and Bhattarai, 2012).

Although there are various advantages to developing forest herbal tea, these products still face challenges in Indonesia. Various raw materials for forest herbal tea need further exploration to enrich
forest herbal tea production. This raw material mainly involves plants that become the subject of ethnobotany, a study of interrelations between humans and plants that provides valid information about the utility of plant species by indigenous people (Suthari et al., 2021). This indicates that forest herbal tea exploration will concern language issues. Most local tribes, especially those living in isolated forest areas, have valuable information about local plants as forest herbal tea raw material is consumed regularly by them (Pandey and Tripathi, 2017). However, most of these people cannot speak Indonesian. Therefore, the information about plants is mostly in the form of the local language, which sometimes cannot be translated into Indonesian. The challenge can be increased if the plants are endemic and have not been introduced into the international taxonomic system (Jadid et al., 2020).

CONCLUSION

Forest herbal tea in Indonesia should be promoted because this country has considerably significant prospects for developing this beverage. The utilisation of herbal tea products in Indonesia has several advantages. The first advantage is that Indonesia has various forest herbal tea source materials that can be produced into beverages with unique characteristics. The second advantage is that forest herbal tea plants do not need a particular cultivation method, which makes it easier to develop them. The third advantage is that standardising forest herbal tea raw materials can provide pharmacological insights, leading to innovation in the field of medicine. The fourth advantage is that forest herbal tea requires a simple processing method that can be conducted at the level of home industry, without the need for heavy investment. The fifth advantage is that forest tree products may be expected to reveal a new income source for forest commodities.

There is every hope that the Indonesian government will establish more priority programs for forest herbal tea development in the future. An advanced consumer preference test should be applied to several forest herbal tea products, especially on a pilot plant scale, not limited to a research scale. Raw material exploration involving local indigenous communities in several places in Indonesia can also be a good recommendation for developing forest herbal tea products. This exploration will need to involve language and botanical experts to anticipate the utilisation of endemic plants that have not been introduced into the international taxonomical system.

REFERENCES


