



## MEDICO-SOCIO-RELIGIOUS USE OF *PIPER BETEL* L. IN ODISHA, INDIA

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Betel leaf or 'Paan' (*Piper betel* L.), an integral component of the chewing stimulant 'betel quid', is a common traditional practice in India with multi-million consumers. The current study focuses on the traditional preparation of betel quid and the pivotal role of betel leaf in medico-socio-religious use in Bhadrak district, Odisha, India. Information on the utilization of *Piper betel* was gathered from 83 informants of various ages in different villages of the district by using questionnaires, complemented by free interviews, informal conversations, and direct observations. Traditionally, the tender stalk of the leaf dipped in castor oil is introduced in the anus for constipation. The juice of the leaf is dropped into the ear to relieve earache and 1-2 leaf is taken orally for indigestion. The result revealed three types of betel quid (Kada paan, Sadha paan, and Raja paan) all of which have a basic combination of majorly *Piper betel* leaf, areca nut, catechu, and slaked lime with variable additional ingredients depending on the local practices or taste. A mixture commonly called gundi is usually used for kada paan. Traditional paan is being used as a post-meal digestive stimulant. Among the services, the offering of paan (only betel leaf and areca nut) is one of the forms of expressing reverence to Hindu deities. *Piper betel* leaf received sastric sanction as an article of use in socio-religious rituals and ceremonies such as those connected with birth, marriage, and death. Again, offering paan to guests is a standard form of hospitality in Hindu homes.

**Keywords:** Betel-vine, Betel quid, Paan, Socio-religious rituals, Folklore

### Introduction

*Piper betel* L. (the betel-vine) is a shed loving, woody, perennial ever-green climber belonging to the family Piperaceae. The Portuguese first used the word 'betel' in the sixteenth-century. It is probably a transliteration of the Malay word 'Vetila' (the mere leaf) which is close in sound to 'betel'<sup>1</sup>. Since its earliest use, it is variously spelled as 'bettele', 'betre', 'betle' and betel is the recently used term. It is called by different names in India i.e. Paan in Hindi, Tambula

in Sanskrit, Villayadela in Kannada, Vettillakkoti in Malayalam, Vettilai in Tamil, Tamalapaku in Telugu, Videch-pan in Marathi, Nagarbel in Gujrati, Paan in Odia and Bangala also called Tanbol in Arabic and Burg-e-Tanbol in Persian<sup>2, 3</sup>. The plant is indigenous throughout the Indian Malay region<sup>4</sup> and distributed extensively from Africa to Madagascar in the West; Melanesia to Tikopia (in the Santa Cruz Islands) in the East; southern China in the North, and Papua New Guinea in the South which includes the Indian subcontinent<sup>5, 6</sup>. There are about 125–150

cultivars of betel-vine available in India<sup>7</sup> and mainly cultivated in West Bengal, Assam, Andhra Pradesh, Bihar, Tamil Nadu, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Uttar Pradesh, and Odisha<sup>8</sup>. Betel-vine leaves are traditionally important because of its economic, medicinal, religious, and ceremonial use<sup>2,9</sup>. Betel chewing releases a complex set of biologically active components into the bloodstream which results in diverse physiological and psychosomatic responses. Betel chewer experience a sense of well-being, heightened alertness, a warm body sensation, and relief hunger. The use of betel leaf is known for centuries for its curative properties such as stimulate the organs of digestion, disinfects the breath, throat and lung problems, cough prevention and healing, reduce unwanted vaginal secretion, prevent itching caused by fungus and external/internal bacteria and strengthens the teeth and increases stamina<sup>10, 11</sup>. Similarly, many authors claimed that betel leaves possess an insecticidal and antitumor activity<sup>12</sup>, antioxidant activity<sup>13,14</sup>, neuroprotective activity<sup>15</sup>, antidiabetic and antihelmintic activity<sup>16,17</sup>, antimicrobial activity<sup>17,18</sup>, antidepressant activity<sup>19</sup>, beneficial effects in Alzheimer's disease by significantly improving the learning and memory functions<sup>20</sup>, a natural antiseptic, astringent, diuretic, mood elevator, and improves the vocal cords<sup>21, 22</sup>. According to Ayurveda, the betel nut used in paan destroys *Pitta* and *Kapha* is intoxicating, a stimulant, laxative astringent, and febrifuge<sup>23</sup>. Black catechu, another ingredient of paan is a strong, astringent, clotting agent and helps to reduce excess mucus in the nose, the large intestines, and vagina. It is used in the treatment of gum bleeding, mouth ulcers, sore throat, eczema, hemorrhages, diarrhea, and dysentery<sup>24</sup>. Many aromatic herbs such as cardamom, clove, and fennel used in paan also possess potent medicinal

properties<sup>22, 25</sup>. In spite of the above-mentioned uses, a majority of publications related to this plant in the past projected it as one of the major causes of oral cancer in betel chewing regions of the world. Though *Piper betel* is a part of something like tobacco associated with oral cancer, but many research findings contradict with these observations and its non-carcinogenic nature has been reported by Bhide *et al.* (1979)<sup>26</sup>. Further investigation by Amonker *et al.* (1986)<sup>27</sup> have conclusively shown non-mutagenic properties in betel leaves and the presence of hydroxychavicol, a phenol with anti-mutagenic properties. The antiproliferative activity of hydroxychavicol in prostate cancer through ROS driven DNA damage and apoptosis has been proved by various groups of scientists<sup>11, 28</sup>. It inhibits platelet aggregation by suppression of cyclooxygenase, thromboxane B<sub>2</sub> production and calcium mobilization<sup>29</sup>. Simultaneously, betel leaves are clearly associated with nutritive benefits as it contains calcium and multiple number of vitamins<sup>30</sup>. Paan is recommended in ancient scriptures of Ayurveda and is closely associated with Indian culture. Here below, I attempt to document the role of *Piper betel* associated with various rituals, ceremonies, and medico-socio-cultural folklore among people of Bhadrak district, Odisha, India.

### Materials and Methods

#### Study Site:

Bhadrak district (20° 43'–21° 13'N and 86° 6'–87° E) is located in Northeast Odisha. It spreads over 2505 km<sup>2</sup> having 1.507 million inhabitants (2011 Census). Four other districts namely Balasore, Kendrapara, Jajpur, and Koenjher surround Bhadrak district while a part is bounded by the Bay of Bengal. The district covers about 1.61 % of the total land area of the state and contributes 3.59 % of the state's

population. The climate of the district is warm and humid. The maximum and minimum temperatures range from 37.4°C to 17.7°C, respectively, and the annual average rainfall is approximately 1428mm. About 86.66 % of the inhabitants are villagers and the people are engaged in agricultural practices as their primary occupation. Being situated in close proximity to the Bay of Bengal, the district is characterized by periodic earth tremors, thunderstorms, and dust storms in April and May<sup>31</sup>.

#### Data Collection:

The method employed was designed with the purpose of providing baseline information on the traditional use of *Piper betel*, through literature survey and field visits to seven blocks of the district i.e. Bhadrak, Bhandaripokhari, Bonth, Dhamnagar, Tihidi, Chandbali, and Basudevpur. The field study was carried out from March 2017 to February 2019 monthly following established and standard procedures<sup>32, 33</sup>. The information on the traditional uses of *Piper betel* for various medico-socio-cultural rituals was obtained through questionnaires, complemented by free interviews, informal conversations, and direct observations<sup>33, 34</sup>. A total of 83 respondents' was considered the key informants in the study and the selection process was based on the knowledge and experience in the traditional use of paan. The interviews and discussions were carried out individually with members of the local population in the local language for each of the villages visited. During repeated visits to the study site further group discussions (5-8 people) were held with: i) old-age key informants and ii) with women. Personal interviews and group discussions with local inhabitants revealed some valuable and specific information about the traditional use of paan in society. During the visits, the different aspects of paan such as the process of cultivation,

materials used for cultivation, harvesting of the leaf, preparation of betel quid, ingredients used for betel quid, and role in medico-socio-religious rituals were discussed.

#### Results and Discussion

From linguistic, archaeological, and literary sources, it seems likely that the custom of betel quid chewing in the Indian subcontinent has survived from ancient times<sup>35</sup> into the twenty-first century. The imprints of this are not just limited to our country or any specific age group, the spread is global and often includes every section of the society even involving women as well as children<sup>36</sup>. Social acceptability, perceived health benefits, religious beliefs, and constant addiction are the major factors that influence a chewer of betel quid and maintain its popularity. The telltale signs of paan chewing are very often visible on roadsides, on public transport, in residential and commercial buildings, and often in most unlikely places like flower pots and even inside lifts. In the Bhadrak district, the betel leaf was cultivated in a particular field called Baroj (Fig. 1a) which is like a small hut of 2m in height approximately. The baroj structure is made up of locally available materials such as wooden poles, bamboos stalk, and coconut leaves as thatching material (Fig. 1a). The creeper cuttings were planted after proper dressing during the rainy season. The plants were neatly arranged in parallel rows about two feet apart, and the saplings were twined around upright sticks of split bamboo (Fig. 1b). Proper shade and irrigation was a prerequisite for the cultivation of *Piper betel*. The mature leaves were plucked within 15-30 days (Fig. 1c) and arranged for marketing (Fig 1d). The present finding draws support from the studies of Jana (1998)<sup>37</sup>. Normally, 1-4 harvestings are done every month<sup>38</sup>. However the leaves may also be retained on the vines for about six months

as they do not show any visual signs and symptoms of deterioration<sup>39</sup>.

In the studied area the tender stalk of the leaf dipped in castor oil was introduced in the anus for constipation. The present result corroborates the findings of Sengupta and Banik (2013)<sup>40</sup>. The juice of the leaf was dropped into the ear to relieve earache. Fern et al. (2020)<sup>41</sup> reported that the leaf extract is applied for wounds in the ears. In the present study, 1-2 leaf was taken orally for indigestion. The present finding draws support from the studies of Rekha et al. (2014)<sup>42</sup> and Madhumita et al. (2020)<sup>43</sup>. The preparation of betel quid varied widely according to the geographic area in which it was chewed. Three types of betel quid (Kada pana, Sadha paan and Raja paan) were available in the studied area. Four ingredients—betel leaf (*Piper betel* L.), areca nut (*Areca catechu* L.), catechu (*Acacia catechu* L. f. Willd.), a resinous extract from the wood of the *Acacia* tree, and slaked lime (Calcium hydroxide) were used for all the types of betel quid. The basic ingredients were supplemented with condiments, sweetening agents, and tobacco depending on availability and as per individual preference. For kada paan, the people of the region usually use a mixture of ingredients commonly called 'gundi'. The gundi was prepared by grinding a variety of the ingredients (Table 1; Fig. 1e-r). For the preparation of gundi, the materials (Table 1) were collected and dried in the sunlight for 1–2 days. All the dried materials are then grounded. The preparation of betel quid was indicated in figure 2a-f. The tip of the leaf, its base and midrib were removed. One side of the leaf was spreaded with lime paste over which thin slices of the nut, small bits of dry catechu (Fig 1s), gundi was added and then it was folded or rolled into a triangular-formed object to obtain a betel quid. In addition, people used a small piece of

*Curcuma amada* Roxb., the fried cellular endosperm of *Cocos nucifera* L., fried areca-nut (*Areca catechu* L.), and peppermint (*Mentha × piperita* L.) (Fig. 2i-j). The sadha paan contains all the individual ingredients (Table 1) except *Nicotiana tabacum* L. (Fig 2k). Raja paan (Fig. 2l) was especially chewed during the festival Raja (14<sup>th</sup> to 16<sup>th</sup> June). The ingredients used in the present study are also reported<sup>44-51</sup>. The prevalence of betel quid chewing practices is observed in different states of India<sup>52-57</sup> as well as various countries of the world<sup>58-64</sup>. In India, most habitual chewers often added tobacco to the betel quid, while in some countries like Papua New Guinea, Taiwan, and China pan is chewed without tobacco<sup>65</sup> and in northeastern India betel leaf is consumed with slaked lime only<sup>66</sup>.

The interaction of the ingredients during chewing produces red-coloured saliva. The red staining results from the chemical reaction of mixing lime powder (calcium hydroxide) with catechu. The current study corroborates the findings of Zumbroich (2007)<sup>67</sup>. When chewing betel, a consumer swallows some of the liquid resulting from the chewing, but typically spits out the indigestible bits. It was observed that chewing of betel quid was a routine item after every meal. Chewing betel leaves after meals is an age-old practice as mentioned in Charaka, Sushruta Samhitas and Kashyapa Bhojanakalpa<sup>68</sup>. During c. 300 to 750 AD, after drinking some liquid following meals, betel leaves with some fragrant spices were chewed as it was believed to help in digestion, remove the phlegm, and make the mouth fragrant. Chewing of betel by the emperors and nobles in India<sup>69</sup> during 13<sup>th</sup> century has already been mentioned by Marco Polo. In Jyotiribandha, it is stated, one who chews tambula (paan) with a preponderance of betel nut in the morning, of chunam in the

midday, and of betel leaves at night attains increasing prosperity<sup>70</sup>.

There are many ways of worshipping gods for Hindus, in which puja is the most popular form. The puja is performed by a standard system of services to be executed to the god at temples and homes. Among the services, the offering of paan (only betel leaf and areca nut) is one of the forms of expressing reverence to Hindu deities (Fig. 2m). A similar type of observation is also reported elsewhere<sup>71, 72</sup>. The Kudumi-yamalai inscription of the Cola King Kulottunga I records the arrangements made for the daily offerings of betel leaf and areca nut to god Tirukkum-ramudaiya-nayanar<sup>73</sup>. *Piper betel* leaf not only became a daily necessity to satisfy the desire but also entered into the social and religious life of the people. It received sastric sanction as an article of use in rituals and ceremonies such as those connected with birth, marriage, and death and formed an integral part of Dakhina for the priest. *Piper betel* leaf was used for worshipping gods and goddesses (Fig. 2n & o). It is also required in ‘Annaprasana’ or the first ceremonial eating of rice, Upanayana, or ceremony of wearing the sacred thread (Fig. 2p) and, funeral occasion. During the marriage ceremonies, there was the custom of applying turmeric to the bride and bridegroom with the paan leaf by elderly women (Fig. 2q-s). In the studied area, paan was offered to guests as a mark of respect in Hindu homes. The present finding akins to the study of Warriar *et al.* (1995)<sup>74</sup>. The use of piper betel leaves for worshiping gods and other socio-religious customs is also reported<sup>70, 75-77</sup>.

**Conclusion**

Betel leaves play an important role in Indian tradition, customs, and rituals. All auspicious Vedic functions or puja require betel leaves. The present study

demonstrates the association of *Piper betel* with social ceremonies and rites from the prenatal ceremony till closing rites after death. Besides rice, betel was the most important item for daily use of a family living in rural areas. Preparation of pann and its ornamentation on a plate is indeed a recognized folk art in the studied area. Betel quid chewing is an expression of cultural and social identity and is woven into the cultures of Bhadrak district, Odisha, India.

Common name	Botanical name	Amount (gm.)
Dhania	<i>Coriandrum sativum</i> L.	200
Pan Madhuri	<i>Foeniculum vulgare</i> Mill.	200
Dukta	<i>Nicotiana tabacum</i> L.	50
Kalajira	<i>Nigella sativa</i> L.	25
Juani	<i>Trachyspermum ammi</i> (L.) Sprague ex Turill	25
Saparkachu	<i>Curcuma zedoaria</i> (Christm.) Roscoe	5
Madhurkathi	<i>Cinnamomum zeylanicum</i> Bl. Bijdr.	10
Jaiphala	<i>Myristica fragrans</i> Houtt. (Fruit)	2
Jaiphula	<i>Myristica fragrans</i> Houtt. (Flower)	2
Labanga	<i>Syzygium aromaticum</i> (L.) Merr. & L.M.Perry	5
Gujurati	<i>Elettaria cardamomum</i> (L.) Maton	5
Kabab	<i>Piper cubeba</i> L.f.	2
Jayatri	Aril covered the fruit nutmeg of <i>Myristica fragrans</i>	2
Chua	A viscous fluid used as scent. It is a type of oil extracted from the Sal tree resin (Jhuna) by fractional distillation process.	20ml

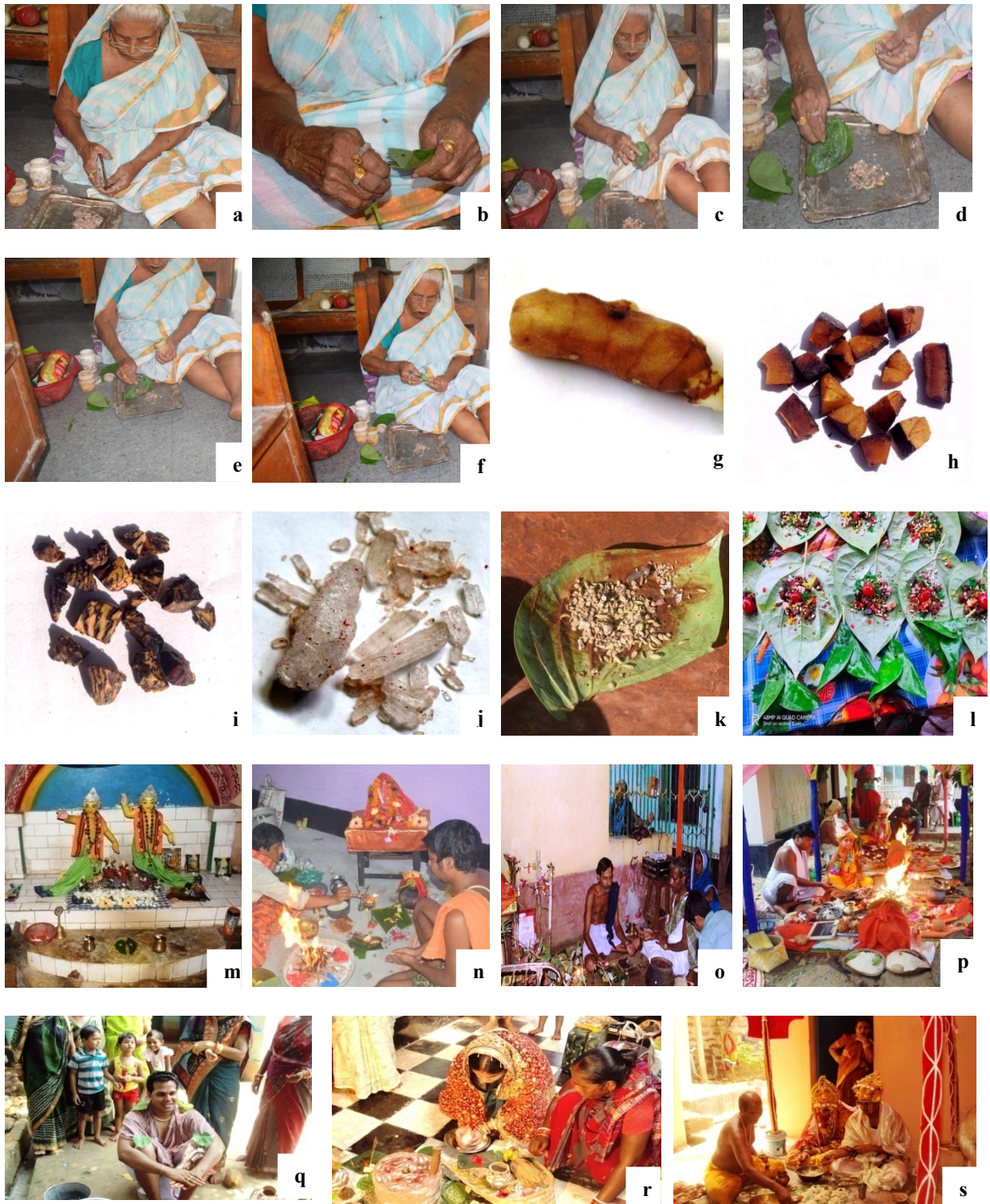
**Table 1:** Ingredients used for preparation of gundi (550gm.).

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**Fig.1:** a. Paanbaroj b. Planting in rows with bamboo stick support c. Plucking of *Piper betel* leaf d. Arrangement of leaf for marketing e. *Coriandrum sativum* L. f. *Foeniculum vulgare* Mill. g. *Nicotiana tabacum* L. h. *Nigella sativa* L. i. *Trachyspermum ammi* (L.) Sprague ex Turrill j. *Curcuma zedoaria* (Christm.) Roscoe k. *Myristica fragrans* Houtt. l. Aril covering the fruit nutmeg of *Myristica fragrans* m. flower of *Myristica fragrans* n. *Syzygium aromaticum* (L.) Merr. & L.M.Perry o. *Elettaria cardamomum* (L.) Maton p. *Cinnamomum zeylanicum* Bl. Bijdr. q. *Piper cubeba* L.f. r. chua: a viscous fluid used as scent s. *Acacia catechu* L. f. Willd.



**Fig. 2:** a-f. Preparation of betel quid (kadapaan) g. *Curcuma amada* Roxb. h. fried cellular endosperm of *Cocos nucifera* L. i. the fried areca-nut (*Areca catechu* L.) j. peppermint (*Mentha × piperita* L.) k. sadhapaan l. Raja paan m. offering of paan to deity n. use of betel leaf in Ganesh puja o. use of betel leaf in Satyanarayan puja p. use of betel leaf in thread ceremony q-s. use of piper betel leaf in marriage ceremony.

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