

Ethnobotanical study on the herbal spruce up of deities in Jagannath temple of Puri, Odisha, India: A positive step towards biodiversity conservation

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Abstract

Plants and plant products (botanicals) are the most abundant and cheap sources of easily available herbal products that are abundantly used in different rituals of deities in temples. Despite being more scientific, these cultural practices are either poorly studied or documented. Therefore, this present survey was carried out to explore the botanical insight of various herbals used in the world famous Jagannath temple of Puri. The data were collected and recorded by undertaking regular visits to the temple through questionnaires and interviews of the relevant priests and service providers as well. The various botanicals, used in the costume of 7 kinds of daily rituals, 31 types of annual practices, 3 types of special festivals and a rare “*Nagarjuna Beshā*” (*Besha* - costume or spruce up of deities) that occurs in every 25 years, were explored in this study. A total of 63 species belonging to 55 genera and 34 families have been identified, which were used extensively for making herbal ornaments and weapons for the deities. According to their uses in different spruce ups, the plants are grouped and described separately. This study would contribute to identify the least explored important botanicals and their uses, which may help in conservation of rare and endangered species.

Key Words: Attires, Floral ornaments, Herbal weapons, Lord Jagannath, Puri temple, Spruce up

Introduction

Most of our cultural and spiritual practices rely on plants and their products. We have a long history of using plants for food, fodder, medicine, shelter, and sacred activities (Hall 2011). The evolution of religious beliefs has integrated botanical knowledge into ritual practices (Miller *et al.* 2019). The ritual use of plants could be 13,500 years old as evident from archeological annals (Iriarte-Chiapusso *et al.* 2015). These religious beliefs attached with places are keys for conservation, which can be seen in the protected holy lands of India (Daniels *et al.* 1993, Gadgil 1987) and India has more than 4,000 sacred groves that cover about 39,000 ha of forests (Malhotra *et al.* 2007).

Since antiquity, botanicals are offered to the deities in different temples and houses to please the God and Goddesses in Hindu mythology. Worshiping plants is one of the earliest forms of religious cult in India (Pande 1964), which is still practiced in many areas. Under the 9th chapter and 26th sloka of “*Shreemad Bhagvad Geeta*” Lord Krishna had said “I accept things with lots of love and affection, when a devotee offers me leaves, flowers, fruits or water with devotion”.

“*Patram, Puspam, Phalam, Toyamjomebhaktyaprajachhati, Tadahambhaktiyupahutamashmamiprayatatmanah*”

The word “*Besha*” is derived from Sanskrit language that means costume or attire. Every day from the auspicious waving of lamps before the Lord i.e. ‘*Mangala Aalati*’ to ‘*Raatni Pabuda*’ (closing of door after the last rituals of a day), the deities on the sanctum sanctorum of Jagannath temple, are decorated with silk and cotton fabrics, gold ornaments embedded with precious gemstones, leaves and flowers of varied but specific herbs. Sandal wood paste (*Santalum album*), *Aguru* (fragrant oil), *Sri Karpura* or Camphor (*Cinnamomum camphora*) and at times *Kasturi* (precious musk) are routinely used in daily and periodical rituals. The deities were always dressed up with cotton and silk clothes such as *Chadara*, *Tadapa*, *Uttariya*, *Srikapada*, *Srimukhabala*, *Paharana*, *Phuta*, *Gita Govinda Paata*, *Baralagi Paata* etc.

The cultural practices of Lord Jagannath are based on anthropomorphic principles, where deities are treated analogous to the human format. The specific servitors present in the temple, who are experts in cladding the



deities to a specific type of *Besha*, take care of it. The deities are mainly adorned in three ways; “*Bastra Singhar*” (cloth adornment), “*Pushpa Singhar*” (flower decoration) and “*Alankar Singhar*” (jewelry embellishment). The Lords are always attired in the first two designs except on the festive times (Mishra 2012). Rituals and religious practices are incomplete without sacred plants and their products (Pandey & Pandey 2016). The trend of worshipping sacred plants was also prevalent during the *Vedic* period (Bhatla *et al.* 1984). Moreover, plants and plant parts are used in all religious functions/festivals and some strong scientific background always persists behind their uses (Bajpai *et al.* 2016). Sacred plants and sacred groves serve as biological legacy and also help to conserve rich biodiversity and preserve the genetic resources (Mir *et al.* 2018).

Some larger temples and especially the ‘*Mathas*’ maintain their flower gardens and orchards as they need more variety of flowers and plants for different deities (Mohanty *et al.* 1997). According to Hindu mythology, Tulsi is deliberated as wife of Vishnu and he loves Tulsi most. Apart from it, flowers of lotus, kadamb, champa and Ashoka are acclaimed for venerating Lord Vishnu (Iyengar 2015).

The deities are offered with step wise *Bastra Sringara*, *Alankara Sringara* and *Pushpa Sringara* without repeating any costume during a day, which is very specific to Jagannath temple, Puri that cannot be seen in any other place. There are “*Fuladasis*” by whom flower ornaments are prepared; “*Paatara*” by whom attires for different *Beshas* are sewn; “*Rangataa*” by whom all the apparatus for separate attires are provided; “*Rupakara*” by whom different types of wooden hands and feet are provided and “*Biswakarma*”, who makes prior arrangement for all the attires. All the attires are basically divided into three types i.e. “*Vabamulaka Beshā*” which explains the attachment of soul of a devotee with God; secondly “*Abatarmulaka Beshā*” that shows all the incarnation of Lord Vishnu and lastly “*Samrat Beshā*” observed by the *Gajapati*, the king of *Utkala* (Odisha), India to elucidate that Lord Jagannath is the king of this Universe.

Plants and plant parts are used extensively in different temple rituals, which sometimes lead to their overexploitation but often contribute to their nurture and conservation. There are many daily and annual activities of the deities that take place regularly, in which plant based natural products are used frequently. But, information about such plants are meager and the rationale behind such uses are least explored. Therefore, the present investigation is carried out to list and identify the plants and their products used in different religious practices of Jagannath temple in Puri. The main objective of this study is to explore the botanical uses behind the world famous cult of Lord Jagannath, Puri and to document the plants/plant products used for making different ornaments and weapons for the deities.

Materials and methods

The present work includes the floristic survey of temple yards and gardens and the ethnobotanical survey of different attires of deities of Puri, Jagannath temple. The map of Puri and Jagannath temple is presented in figure 1. Data collection and floristic survey were carried out consecutively for two years (from June 2019 to June 2021) in the gardens and cultivated areas near Jagannath temple to collect and identify the plants that are used in various ornamental decorations of different spruce ups of Lord Jagannath. Data represented here were collected by interviewing local learned people attached to temples including priests, temple gardeners and traditional temple florist called ‘*Maali*’ by following the participant observation method (Kothari 1990). Frequent interviews were also carried out with eminent historians, government officials, temple administrative officers and important personalities, who had keen interest on Shree Jagannath temple and its culture. Regular field trips were conducted and plants were identified by professional botanists/herbalists and with the help of available literature. Voucher specimens were collected, identified and authenticated by standard procedure (Haines 1925, Saxena & Brahmam 1996) and stored in the department herbarium. This study does not include any human or animal subjects. Data/information were collected from local people and officials and noted on spot. Plant materials were collected from local areas. Photographs of the deities were taken with verbal permission to be used for academic purposes only.

Results

The pictures of the deities along with their herbal ornaments and weapons and the gardens where these plants are nurtured, and the different plants whose flowers, inflorescences, leaves, stems, fruits, roots or their products are used in either making floral ornaments, herbal weapons or used for different attires are presented in figures 2-11 and tables 1-6. A total of 63 species belonging to 55 genera and 34 families have been identified, those were extensively used to prepare 46 types of different ornaments and weapons, which were listed below and have great importance in 7 types of daily, 31 annual and 03 special attires. The plant data are also presented in a consolidated tabular form, highlighting their local name, botanical name with family names and the category of their use for specific purpose, etc. for convenience of study (Table 6).

According to the use of plant parts in different spruce ups, the plants are categorized separately. There are varieties of flowers/inflorescences, leaves, stems, resins, fruits and roots of different plant species belonging to different genera and families, which are frequently used daily, annually and in special festive attires of the deities. A graph representing a comparison between the different plant parts, which are listed in the above-mentioned tables, is presented in figure 2. It is conferred from our study that flowers are the major attractions of different attires and

varieties of them are used to decorate the deities on different occasions.

Role of flowers in different attires

35 varieties of flowers belonging to 32 plant species, 25 genera and 18 families are identified to be used for making different ornaments, as *Tabernaemontana divaricata* of Apocynaceae family had 4 different varieties and mostly ornamental cultivars are variants of same species. Such variable flowers belonging to same species are also frequently seen in the species of *Rosa indica* and *Hibiscus rosa-sinensis*. Mostly the herbs/plants, whose flowers are routinely used, are exclusively planted and nurtured in temple yards. Moreover, they are planted to beautify the temple premises. Flowers of five species viz., *Saussurea obvallata* (Asteraceae) and *H. mutabilis* (Malvaceae), *Passiflora incarnate* (Passifloraceae), *Crossandra infundibuliformis* (Acanthaceae) and *S. asoca* (Caesalpiniaceae) are used rarely. Only 12 types of flowering plants are used regularly among which 11 types of flowers are used for making ornaments i.e. *Hedychium coronarium*, *Ixora coccinea*, *Jasminum multiflorum*, *Jasminum sambac*, *Jasminum arborescens*, *Nelumbo nucifera*, *Nerium oleander*, *Polianthes tuberosa*, *Rosa indica*, *T. divaricata*, *Tagetes erecta* but only a part of *Saffron crocus* flower i.e. styles and stigmas are used for making a facial paste for the deities, but, the use of other 20 types of flowering plants depends upon seasonal availability. The deities are decorated with different types of floral ornaments and garlands throughout the year (Fig. 3). Flowers belonging to Oleaceae, Asteraceae, Rubiaceae and Apocynaceae are majorly used for the deities.

Role of leaves in different attires

Leaves of 11 species belonging to 11 genera and 9 families have been identified to be used for making different ornaments. Among these, 4 species are used rarely i.e. *Desmostachya bipinata*, *Hiptage benghalensis* and *Scirpus grossus* and *Ziziphus mauritiana*. The rest 7 species are essential on daily basis for making daily ornaments.

Role of different types of stem in different attires

Among 5 plant species belonging to 5 genus and 5 families, stems of 3 species namely *Aeschynomene aspara*, *Bambusa bambos*, *Calamus rotang* have been identified to be used directly in making different ornaments during different annual and special spruce ups. One species *Santalum album*, is used for preparing a paste in huge amount to cover the entire body of deities during *Chandan yatra* (festival). The exotic and fragrant sandalwood is used for anointing the body to be cool and enhance their radiance and beauty. The stem of *Mimusops elengi*, is directly used during *Sena patalaji Besha* to protect idols during *Pabandi yatra* (transfer from their sanctum sanctorum during chariot festival and *Snana purnima*).

Role of resins

About 4 species belonging to 4 genera and 4 families have been identified, whose resins are used in making ornaments

and weapons for different attires. Out of which one species, *Limonia acidissima* play a vital role in preparing any ornament as glue, since artificial gums are not used for Lord Jagannath. Moreover, they are also used for *Banakalaji* (coloring idols with natural stone color). Basically the resins/glues are used to fix one stem with other to give it a desired shape for making weapons, *Taabia* and also used for gluing certain decorative items. Another species is *Aquilaria malaccensis*, whose product is called *aguru* that is used as perfume for body and facial make up of deities. *Cinnamomum camphora* is used for making facial paste of deities along with sandalwood. This paste is also directly applied for facial touchup.

Role of fruits

About 8 types of plants belonging to 7 genera and 7 families have been identified whose fruits are used in the divine attires. Out of which 4 are used for making different ornaments like garlands. *Gossypium arboreum* fruit fibers are used indirectly to make hand sewn clothes in traditional manner, *Mallotus philippensis* is used directly for making a red dye to make *Jhimiri fagu* during *Dolo purnima* and *Sesamum indicum* is used to prepare herbal black color for deities. *Areca catechu* fruits are used for making *Rakhis* (a special hand ornament) for Lord during *Rakshabandhan*.

Role of roots

Root of 4 plant species belonging to 4 genera and 4 families have been identified to be used for making a colored powder (*Jhimiri fagu*) along with a red colored dye obtained from seeds of *Mallotus* that is offered to Lord in *Chacheri Besha* to celebrate the festival *Dolo purnima* (day before Holi, festival of colors). It was found from the study that not all the listed plant parts are used regularly for the deities; rather there are only a few species, which are routinely used like flowers of *Tabernaemontana divaricata*, leaves of *Ocimum sanctum*, stems of sandal wood and camphor powder. But there are many species, which are infrequently used. Therefore a comparison of rare and frequent use of varieties of plant parts is presented in figure 4 and it is inferred that maximum plants and their parts (flower, fruit, stem and root) are used occasionally except the leaves and resins.

Discussion

Since time immemorial, botanicals (plants, plant parts and their products) have been used as valuable source of food, fodder, essential products for not only maintaining the human and animal health but, they also played significant role in various religious practices. In Puri temple, *Besha* is carried out not only to decorate and complete seasonal activities of Lord but also few costumes are there, which fulfill God's intimacy towards His devotees (Behera 2014). Worship of sacred plants maintains local biodiversity and plays an important role in its management and conservation. These plants also play an important role in the life of common people in the form of ethnomedicines for treating various ailments (Sahu *et al.* 2013). The

religiously conserved regions provide a comprehensive and rich ecological niche as repositories of genetic diversity (Anthwal *et al.*2010). Jagannath culture is unique in that sense thousands of people also earn their livelihood from different parts of Odisha by serving the Lord or by rendering their services towards the Lord like *Maali*/caretaker of different gardens of Lord. The use of plants in rituals is a little explored corner of biocultural diversity, which has developed through time within a complex socio-ecological system (Stryamets *et al.* 2021). About 30 types of ornaments and 16 types of weapons are prepared from plant and plant parts among which 19 ornaments are used daily and rest are specific. Due to such multifarious use of plants in temples, they have been cultivated and protected from the vagaries of nature and other harmful agents including human beings (Mohanty *et al.* 2012). The present study indicated that during different spruce ups, flowering species are more abundantly used than the leaves, which is the second most required plant parts for the deities. It is confirmed that botanicals and ritual/cultural practices are closely interlinked and they are based on firm scientific basis that often under lies unexplored or least explored.

Conclusion

This study can help or improve the knowledge of people in many ways of treating different plant and its product in their day-to-day life. Ornamental gardening and landscaping has expanded as a multi-faceted industry encompassing activities such as propagating and rearing ornamental plants, production of growing media, pots and other accessories, *etc.* there by generating huge employment opportunities and simultaneously promoting activities that would improve the environment. Hence, this study also provides a great economic opportunity along with understanding the important role of botanicals in the cultural and religious practices. Moreover, many of the listed plants have diverse and important medicinal values that are still unexplored and underutilized, which will be explored in future.

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Table 1. List of attire/spruce ups taken up by the deities in every day (Mishra 1999)

S.no.	Name of Beshas (spruce up)
1	<i>Tadapauteriabakaasa</i> (first spruce up at morning)
2	<i>Abakaasapara / Sadhava Besha</i> (second spruce up)
3	<i>Sabanamelapara/ SadbaBesha</i> (normal get up after the visiting of devotees)
4	<i>Sakaaladhupapara/ Madhyarnadhupa</i> (dress up for first meal)
5	<i>Madhyaarnadhupapara</i> (after lunch)
6	<i>Sandhyaadhupapara</i> (after the auspicious waving of lamps before the Lord at evening)
7	<i>Badasinbaara</i> (during night last spruce up)

Table 2. List of spruce ups that take place in a sequence annually (Haines 1925; Pattanaik 2012)

S.no.	Name of Beshas (spruce up)	S.no.	Name of Beshas (spruce up)
1	<i>Chandan</i>	17	<i>Daalikiaa (Nrusingha)</i>
2	<i>Rukmanibarana</i>	18	<i>Raajarajeswara (SunaaBesha)</i>
3	<i>Ganapati/ Gajaanana</i>	19	<i>Naagaarjuna/ Parsuram</i>
4	<i>Nabajoubana</i>	20	<i>Sraadha</i>
5	<i>Badatadau/ Sunaa</i>	21	<i>Ghodaalaagi</i>
6	<i>Banavoji</i>	22	<i>Jamalaagi</i>
7	<i>Kaaliyadalana</i>	23	<i>Pusyaavisheka (Sunaa Besha)</i>
8	<i>Pralambasura Badha</i>	24	<i>Makarachourasi (nabanka) Besha/ Mahanarayana</i>
9	<i>Krushna Balaram</i>	25	<i>Padma</i>
10	<i>Bali Baamana</i>	26	<i>Gajaudhaarana</i>
11	<i>Rajaa (Suna Besha)</i>	27	<i>Chbacheri</i>
12	<i>Radha Damodaraa</i>	28	<i>Jogeswara Krushna (SunaBesha)</i>
13	<i>Haribara</i>	29	<i>Senaapatalaagi</i>
14	<i>Laxminaarayana Besha/Thiaakiaaa</i>	30	<i>Taahialaagi</i>
15	<i>Baankachudaa</i>	31	<i>Raamaraaja</i>
16	<i>Adakiaa (Tribikram)</i>		

Table 3. List of special attires/spruce ups taken up by the deities on special occasions.

S. no.	Festival costume	Specificity
1	<i>Chitaalaagi</i>	During Chariot festival of the deities wear a natural <i>Chitaa</i> made up of plant materials.
2	<i>Rakhyabandhana</i>	Lord Jagannath and Lord Balabhadra wear a special hand ornament made up of fruits of <i>Areca catechu</i> L.on behalf of goddess Subhadra.
3	<i>Raahurekhaalaagi</i>	<i>Raahurekhaa</i> (a gold plate/band) is worn by Lord Jagannath and Balabhadra on their head on <i>Rekha/Rakhya Panchami</i> to signify the mas the saviors of mankind.

Table 4. List of herbal ornaments used by the deities during their different attires

S.no.	Name of ornaments	Plant part used	Sl. no.	Name of ornaments	Plant part used
1	<i>Gunaa/Nakachanaa</i>	Flower, leaf	16	<i>Dayanamaala</i>	Flower, leaf
2	<i>Jhumpaa</i>	Flower, leaf	17	<i>Nakhatulasi</i>	Flower, leaf
3	<i>Gavaa</i>	Flower, leaf	18	<i>Kalipadaka</i>	Flower, leaf
4	<i>Chandrikaa</i>	Flower, leaf	19	<i>Chausaramaala</i>	Flower, leaf
5	<i>Alakaa</i>	Flower, leaf	20	<i>Chitaa</i>	Stem, resin
6	<i>Tilaka</i>	Flower, leaf	21	<i>Astadalapadma</i>	Stem, resin
7	<i>Kundala</i>	Flower, leaf	22	<i>Surjya (sun)</i>	Stem, resin
8	<i>Nakuasi</i>	Flower, leaf	23	<i>Chandra(moon)</i>	Stem, resin
9	<i>Adharamaala</i>	Flower, leaf	24	<i>Taahia (crown)</i>	Flower, leaf, Stem, resin
10	<i>Sripayaramaala</i>	Flower, leaf	25	<i>Haridaamaala</i>	Fruit
11	<i>Makarakundala</i>	Flower, leaf	26	<i>Babadaamaala</i>	Fruit
12	<i>Karapallab</i>	Flower, leaf	27	<i>Rudrakhyamaala</i>	Fruit
13	<i>Hrudapadaka</i>	Flower, leaf	28	<i>Aanlamaala</i>	Fruit
14	<i>Kausuwapadaka</i>	Flower, leaf	29	<i>Sebatimaala</i>	Flower
15	<i>Tagadi</i>	Flower, leaf	30	<i>Padmamaala</i>	Flower

Table 5. List of herbal weapons used by the deities during their different attires

S. no.	Name of weapons	Plant part used	S.no.	Name of weapons	Plant part used
1	<i>Hala</i> (plough)	Stem, resin	9	<i>Sankha</i> (conch shell)	Stem, resin
2	<i>Musala</i>	Stem, resin	10	<i>Baankachuri</i> (Knife)	Stem, resin
3	<i>Chakra</i> (wheel)	Stem, resin	11	<i>Dhaalla</i> (shield of warrior)	Stem, resin
4	<i>Dhanu</i> (bow)	Stem, resin	12	<i>Singhadua</i> (horn like weapon)	Stem, resin
5	<i>Tira</i> (arrow)	Stem, resin	13	<i>Kalapi</i>	Stem, resin
6	<i>Naagataati</i> (arrow holding container)	Stem, leaves, resin	14	<i>Kataari</i>	Stem, resin
7	<i>Haandia / sirastani</i> (a cap of warrior)	Stem, resin, leaf	15	<i>Baghabaa</i>	Stem, resin
8	<i>Gadaa</i>	Stem, resin	16	<i>Tenu</i>	Stem, resin

Table 6. List of plants used for preparation herbal ornaments

S.no.	Scientific name	Family	Vernacular name	Plant part used	Name of costume	Ritual Use
1	<i>Aeschynomene aspera</i> L.	Fabaceae	<i>Solba</i>	Stem	<i>Naagaarjuna, Gajaundbarana, Gajaanana, Raadhaadamodar, Daalakia, Tribrikrama</i>	<i>Taahia</i> (crown of head) decorative weapons like <i>Hala, Musala, Chandra, Surya, Elephant face</i> .
2	<i>Aganos mabeynei</i> (Spreng.) Ined.	Apocynaceae	<i>Maalati</i>	Flower	<i>Raajeswar</i> costume, <i>Raadha adaamodara</i> costume. If available then each rituals.	During the holy month of <i>Kaartika</i> dried flower garland are offered to Lord, which is considered to be the blessing of god towards <i>Maalati</i> flower, as wilted flowers are not used for the deities normally.
3	<i>Areca catechu</i> L.	Arecaceae	<i>Guaa</i>	Fruit	During <i>Rakhyabandhana</i> festival	<i>Rakhi</i> for both Lord Balabhadra and Jagannath.
4	<i>Artemisia vulgaris</i> L.	Asteraceae	<i>Dayana</i>	Leaf	Each and every costume	Major attractions on the shoulder of deities and, also used as garland

						(<i>Dayanaa Maala</i>).
5	<i>Artocarpus heterophyllus</i> L.	Moraceae	<i>Panasa</i>	Leaf	Each and every costume	This leaf has a great value in making pots during certain rituals and used as a supporting plate on which flowers are stitched to make heavy ornaments.
6	<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae	<i>Aguru</i>	Resin	Each and every costume	Aguru (fragrant oil) produced from crude extract used as perfume for Lord but not for body only for clothes.
7	<i>Asparagus recemosus</i> Willd.	Asparagaceae	<i>Satabari</i>	Root	Chacheri	Tuberous root dried powder used in Jhimiri fagu (a special color used during color festival) preparation.
8	<i>Bambusa bambos</i> L.	Poaceae	<i>Baaunsa</i>	Stem	<i>Naagaarjuna, Gajandharana,</i>	<i>Taabia</i> and <i>Haandia</i> (crown of head), weapons used as a support.
9	<i>Calamus rotang</i> L.	Arecaceae	<i>Beta</i>	Stem	<i>Naagaarjuna, Gajandharana, Kaliyadalana</i>	<i>Taabia</i> and <i>Haandia</i> weapons, snake
10	<i>Cestrum nocturnum</i> L.	Solanaceae	<i>Henea</i>	Flower	Not specific depends upon season. Every day spruce up.	Garland, Gunaa, Padaka
11	<i>Chrysanthemum morifolium</i> (Ramat.) Hemsl.	Asteraceae	<i>Sebati</i>	Flower	<i>Raajeswar, Baamana</i>	Garland
12	<i>Chrysanthemum indica</i> L.	Asteraceae	<i>Chand ramalikkaa</i>	Flower	<i>Raajeswar, Baamana</i>	Garland.
13	<i>Cinnamomum camphora</i> (L.) J.Presl	Lauraceae	<i>Karpura</i>	Resin	Each and every, <i>Chandan lagi</i>	Camphor produced from crude extract or juice and the powder is used in different rituals.
14	<i>Cocos nucifera</i> L.	Arecaceae	<i>Nadiaa</i>	Leaf	Each and every costume	The leaf veins are extensively used to make ornaments, <i>Taabiaa</i> help to stitch flowers and leaf together to give shape.
15	<i>Curcuma angustifolia</i> Roxb.	Zingiberaceae	<i>Palna</i>	Root	<i>Chacheri</i>	Dried powder used in <i>Jhimirifagu</i> preparation.
16	<i>Cynodon dactylon</i> (L.) Pers.	Cyperaceae	<i>Duba</i>	Leaf	<i>Taabialagi</i> and all rituals.	It has a great importance in all spruce up and worships. A bunch of leaf is used in top of <i>Taabiaa</i> ,
17	<i>Cyperus rotundus</i> L.	Cyperaceae	<i>Mutha</i>	Root	<i>Chacheri</i>	Dried root powder used in <i>Jhimiri fagu</i> .
18	<i>Desmostachya bipinata</i> (L.) Stapf.	Poaceae	<i>Kusa</i>	Leaf	<i>Balibaamana</i>	Lord Jagannath holds a bunch of leaf on right hand.
19	<i>Elaeocarpus ganitrus</i> Roxb. ex G.Don	Elaeocarpaceae	<i>Rudra akhya</i>	Fruit	During <i>Rathayatra, Balibamana</i>	Garland
20	<i>Gardenia jasminoides</i> J. Ellis	Rubiaceae	<i>Sugan dharaj</i>	Flower	Not specific depends upon season. Every day spruce up	Floral ornaments and garlands, <i>Gunaa, Padaka</i>
21	<i>Gossypium arboreum</i> L.	Malvaceae	<i>Kappa</i>	Fruit	Every costume.	Different clothes of deities by hand sewing in traditional manner.
22	<i>Hedychium coronarium</i> J.Koenig	Zingiberaceae	<i>Gurud ulaanga</i>	Flower	Seasonal	Floral ornaments and garlands, <i>Gunaa, Padaka</i>
23	<i>Hibiscus mutabilis</i> L.	Malvaceae	<i>Stalap adma</i>	Flower	Seasonal	These are also in rare use, only offered by some devotees
24	<i>Hiptage benghalensis</i> (L.) Kurz	Malpighiaceae	<i>Madhabi</i>	Leaf, flower	<i>Pahandiyatra</i> Everyday spruce up	Preparation of <i>Taabia</i> by cutting leaf in circular shape. Flowers are used rarely

25	<i>Ixora coccinea</i> L.	Rubiaceae	Rangani	Flower	Every day	Only red flower among all varieties are used floral ornaments and garlands, <i>Gunaa, Padaka, Taabhaa</i>
26	<i>Jasminum arborescens</i> Roxb.	Oleaceae	Niaali (badak unda)	Flower	Seasonal	<i>Padakas, Garland, Gunaa, Jhumpaa, Karapalaba.</i>
27	<i>Jasminum auriculatum</i> Vahl	Oleaceae	Jubi	Flower	Seasonal	Garland, <i>Gunaa, Jhumpaa, Karapalaba.</i>
28	<i>Jasminum grandiflorum</i> L.	Oleaceae	Jaai	Flower	Seasonal	Garland, <i>Gunaa, Jhumpaa, Karapalaba.</i>
29	<i>Jasminum Laurifolium</i> Roxb ex Hernem	Oleaceae	Kanda prajaati	Flower	Seasonal	Garland, <i>Gunaa, Jhumpaa, Karapalaba, Padaka.</i>
30	<i>Jasminum multiflorum</i> (Burm. F.) Andrews	Oleaceae	Kanda	Flower	Seasonal	Garland, <i>Gunaa, Jhumpaa, Karapalaba, Padaka</i>
31	<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Mali	Flower	Every day	Garland, <i>Taabhaa</i> and all type of ornaments.
32	<i>Limonia acidissima</i> L.	Rutaceae	Kaitba	Resin	<i>Naagaarjuna, Gajaudharana, Kaliyadalana,</i> all occasions	Gum is used as a fixative for different ornaments and weapons as well as to give facial color.
33	<i>Mallotus philippensis</i> (Lam.) Muel. Arg.	Euphorbiaceae	Kakuma	Fruit	<i>Nabajaubana, Chacheri</i>	Red color dye obtained from seed used for different purposes during spruce up. Preparation of <i>Jhimiri fagu</i> (dye used on the occasion of <i>Dolo purnima</i>).
34	<i>Michelia champaca</i> L.	Magnoliaceae	Sworna champaa	Flower	Every day spruce up.	Garland, <i>Gunaa, Padaka</i>
35	<i>Mimusops elongi</i> Linn.	Sapotaceae	Baula	Stem	<i>Senaapataalagi</i> costume.	<i>Senaapataa</i> means backward supporting during <i>Pahandi yatra</i> mostly derived from Sakhigopal area.
36	<i>Murraya paniculata</i> (L.) Jack.	Rutaceae	Kaamini	Flower	Not specific depends upon season. Every day spruce up	Garland. These are also in rare use only offered by some devotees.
37	<i>Musa paradisiaca</i> L.	Musaceae	Kadali	Leaf	Each and every costume	Leaf fibers are used to tie flowers and leaves to make garland and also used to make other ornaments.
38	<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Padma	Flower	Bamana costume, Padma costume, Gajaudhaarana, Raajaaraam costume.	Garland
39	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Kadamba	Flower	Bamana, Rajarajewar, Balaram	These are also seasonal flower used as garland
40	<i>Nerium oleander</i> L.	Apocynaceae	Karabira	Flower	Not specific depends upon season. Every day spruce up	Garland, <i>Gunaa, Padaka.</i>
41	<i>Nyctanthus arbor-tristis</i> L.	Oleaceae	Gangasinli	Flower	Not specific depends upon season. Every day spruce up	These are also in rare use only offered by some devotees
42	<i>Ocimum sanctum</i> L.	Lamiaceae	Tulasi	Leaf	Each and every costume	For making garland, crown
43	<i>Origanum majorana</i> L.	Asteraceae	Marua	Leaf	Each and every costume	For making garland, crown

44	<i>Pandanus fascicularis</i> Lam.	Pandanaceae	<i>Kiaa/ Ketaki</i>	Flower	<i>Bamana, Banavoji</i>	Flower ornaments and to decorate <i>Taabiaa</i> .
45	<i>Passiflora incarnate</i> L.	Passifloraceae	<i>Tamaala</i>	Flower	Not specific depends upon season. Every day spruce up	Garland.
46	<i>Polianthes tuberosa</i> L.	Amaryllidaceae	<i>Rajani gandhaa</i>	Flower	Each and every costume	Garland, <i>Gunaa, Hrudapadaka</i>
47	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	<i>Anala</i>	Fruit	During holy month of <i>Kartika Purnima</i> every day	Garland.
48	<i>Rosa indica</i> L.	Rosaceae	<i>Golaapa</i>	Flower	Each and every costume	<i>Gunaa, Padaka</i> .
49	<i>Saffron crocus</i> L.	Iridaceae	<i>Kesar</i>	Flower	<i>Banakalagi, chandana yatra</i>	Paste for facial make up, not used in any ornaments.
50	<i>Santalum album</i> L.	Santalaceae	<i>Chandana</i>	Stem	<i>Chandana yatra</i> , each and every costume	<i>Srimukha sringar</i> (paste applied in different spruce up on face and body of deities)
51	<i>Saraca asoca</i> (Roxb.) Willd.	Caesalpiniaceae	<i>Asokaa</i>	Flower	<i>Radhadaamodar</i> costume, daily costume of Asokaastami	Offered only in <i>Asokaastami</i> (festival), as medicine.
52	<i>Saussurea obvallata</i> (DC.) Edgew.	Asteraceae	<i>Brambakamal</i>	Flower	Not specific depends upon season. Every day spruce up	Flower used rarely but one of the favorites of Lord. It is believed by local devotees that by offering this flower one can fulfill his/her wish.
53	<i>Scirpus grossus</i> L.	Cyperaceae	<i>Santaraa</i>	Leaf	<i>Naagaarjuna. Gajandhaarana</i> costume.	These leaves are used for making different weapons by wrapping around the stem of <i>B. bambos</i> L. and <i>C. rotang</i> L. stem to give a smooth appearance.
54	<i>Sesamum indicum</i> L.	Pedaliaceae	<i>Raasi</i>	Fruit	Every day Banakalagi	Seed oil used to make black color for daily facial touch up.
55	<i>Sesbania grandiflora</i> (L.) Poiret	Fabaceae	<i>Agasti</i>	Flower	Not specific depends upon season. Every day spruce up	<i>Gunaa</i> .
56	<i>Shorea robusta</i> Roth.	Dipterocarpaceae	<i>Sal</i>	Resin	Each and every costume	<i>Chuaa</i> (crude oil) also offered as fragrant oil.
57	<i>Solanum virginianum</i> L.	Solanaceae	<i>Ankaranti / kantakari</i>	Root	<i>Chacheri</i>	Dried root powder used in <i>Jhimiri sagu</i> .
58	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Apocynaceae	<i>Taraata, Tagara</i>	Flower	Each and every costume	Flowering ornament specially with garland, <i>Gunaa, Hrudapadaka, Jhumpaa</i>
59	<i>Tagetes erecta</i> L.	Asteraceae	<i>Gendu</i>	Flower	Each and every costume.	Garland, <i>Gunaa, Padaka, Karapallaba, Alakaa, Gavaa</i> .
60	<i>Tagetes patula</i> L.	Asteraceae	<i>Manika chaandi</i>	Flower	Each and every costume	Garland, <i>Gunaa, Padaka, Karapallab, Alakaa, Gavaa</i>
61	<i>Terminalia chebula</i> Retz.	Combretaceae	<i>Haridaa</i>	Fruit	<i>Naagaarjuna, Gajandbarana</i>	Garland (gold made but looks like real fruit)
62	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	<i>Baabaadaa</i>	Fruit	<i>Naagaarjuna, Gajandbarana,</i>	Garland (gold made but looks like real fruit).
63	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	<i>Barakoli</i>	Leaf	Each and every costume	For making crown, real garland



Figure 1. The picture of Shree Jagannath temple, Puri and map of Puri, Odisha, India

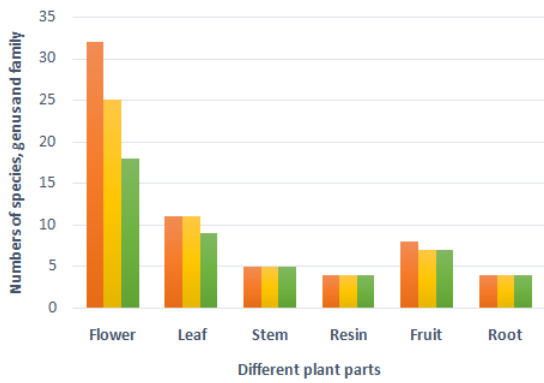


Figure 2. Comparison of different plant parts and their family, genus and species used in different attires of the deities of Puri, Jagannath temple

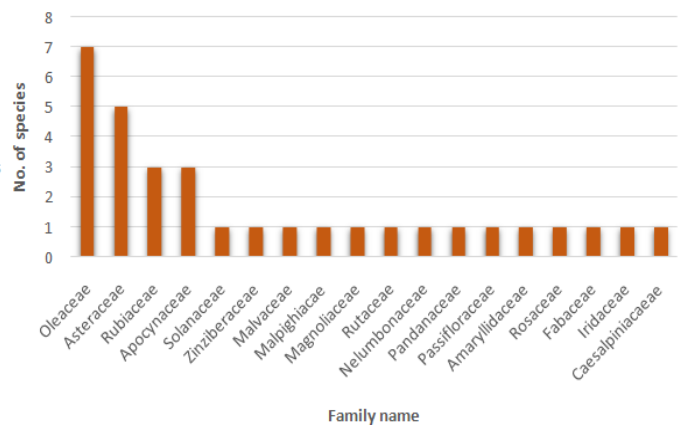


Figure 3. Comparison of flowers belonging to different families, those are used for the deities of Puri, Jagannath temple

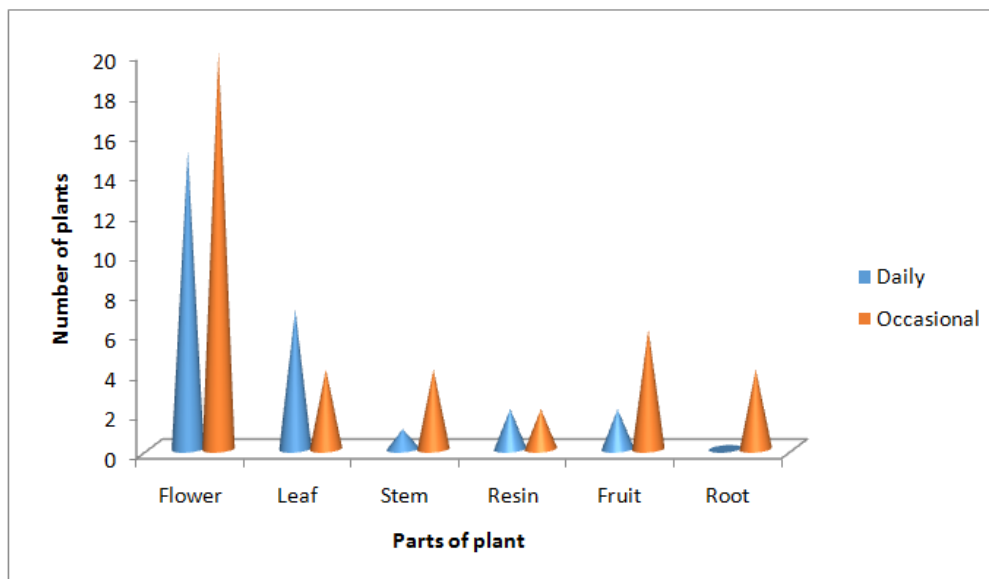


Figure 4. Comparison of different plant parts used daily or occasionally for the deities in Puri, Jagannath temple

Figure 5. Different herbal/floral divine ornaments and weapons used by Lord Jagannath, Balabhadra and goddess Subhadra during various festivals.



Lord Balabhadra



Goddess Subhadra



Lord Jagannath



Chandan Yatra festival



Lord Rama and Krishna



Taabiah preparation



Taabiah of Lord Madan Mohan



Kara Pallava



Jhumpaa



Gavaa



AdbaraMaala



Hruda Padaka



Naakachanaa



Chandrikaa



Naaknaasi



Resin of *Limonia acidissima* L.



Stem of *Aeschynomene aspera*



Ocimum garden at Jagannath Ballavamatba



Servitors showing a leaf of *Scirpus grossus* L. used in weapons and ornaments



Cultivated garden of *Hedychium coronarium* flower



A visit to Nilachala Bhakta Nibasavatika



Visiting weapon preparation place



Servitor Mr. Basant Ku. Rana, in-charge of *Besha* made with *Solho*



Officer in-charge Dr. B. Mishra

Figure 6. Plants/flowers used in divine ornaments and weapons.



Agarosa mahaynei (Spreng.) Ined



Cestrum nocturnum L.



Chrysanthemum indica L.



Chrysanthemum morifolium
(Ramat.) Hemsl.



Gardenia jasminoides J. Ellis



Hedychium coronarium J.Koenig



Hiptage benghalensis (L.) Kurz



Hibiscus mutabilis L.



Ixora coccinea L.



Jasminum arborescens Roxb.



Jasminum auriculatum Vahl.



Jasminum grandiflorum L.



Jasminum laurifolium Roxb. ex
Hernem



Jasminum multiflorum (Burm. f.)
Andrews



Jasminum sambac (L.) Aiton



Michelia champaca L.



Murraya paniculata (L.) Jack.



Nelumbo nucifera Gaertn.



DOSSEL



Nerium oleander L.



Nyctantbes arbortristis L.



Pandanus fascicularis Lam.



Passiflora incarnate L.



Polianthes tuberosa L.



Rosa indica L.



Saraca asoca (Roxb.) Willd



Epiphyllum oxypetalum (DC.) Haworth



Saffron crocus L.



Sesbania grandiflora (L.) Poiret



Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.



Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.



Tabernaemontana divaricata (L.) R. Br. ex Roem. & Schult.



Tabernaemontana divaricata (L.) R. Br. ex Roem. & Schult.



Tagetes erecta L.



Tagetes patula L.

Figure 7. Plants/leaves used in divine ornaments and weapons



Artemisia vulgaris L.



Artocarpus heterophyllus L.



Cocos nucifera L.



Cynodon dactylon (L.) Pers.



Desmostachya bipinata (L.) Stapf.



Musa paradisiaca L.



Ocimum sanctum L.



Origanum majorana L.



Scirpus grossus L. leaf used for weapon preparation



Ziziphus mauritiana Mill.

Figure 8. Plants/stem used for divine weapons



Aeschnomene aspera L. stem used for ornament and weapon preparation



Bambusa bamboos L.



Calamus rotang L.



Mimosa elengi L.



Santalum album L.

Figure 9. Plants and their resin/products that are used in divine ornament and weapon preparations and other daily activities



Aguru extracted from *Aquilaria malaccensis* Lam.



Camphor from *Cinnamomum camphora* (L.) J.Presl.



Resin from *Limonia acidissima* L.



Oil from *Shorea robusta* Roth

Figure 10. Images of plants/fruits used in divine ornament and weapon preparations



Areca catechu L.



Elaeocarpus ganitrus Roxb. ex G.Don



Gossypium arboreum L.



Mallotus philippensis (Lam.) Müell.-Arg.



Phyllanthus emblica L.



Sesamum indicum L.



Terminalia bellirica (Gaertn.) Roxb



Terminalia chebula Retz.

Figure 11. Plants/roots used in divine ornaments and weapon preparations



Asparagus racemosus Willd.



Curcuma angustifolia Roxb.



Cyperus rotundus L.



Solanum virginianum L.