Saptaparna is a medium-to-large evergreen tree with a dense crown and a straight cylindrical bole. You may not recognize the tree, but you will not fail to note the strong fragrance of the flowers, which bloom between October and December. *Saptaparna (Saptaparni) in Sanskrit means "seven leaves", and is based on the fact that four-to-eight simple leaves – more often seven – occur in a circle at each node around the stem. The species is native to India and is now present in China, South- and South-east Asia and Australia.

\footnote{Unless otherwise acknowledged, the photographs are mine.}
Saptaparna is a very handsome, tall and evergreen tree, commonly planted along avenues and in gardens. There are 41 trees on NII campus. This tree is near M Block.

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Saptaparna

Table 1. Vernacular Names of Saptaparna
Alstonia scholaris has several vernacular names across India (see Table 1). Its English names “scholar's tree” and “blackboard tree” refer to its use in making school black boards and wooden slates for children to write on. Its other name “devil tree” or “shaitan ka jhad” is based on the belief in Western India, that the tree is an abode of evil spirits.

**Box 1. The Devil Tree on Āti Amāvāsyā**

In the coastal districts of Dakshina Kannada and Udupi in Karnataka, many communities traditionally depend on the local biodiversity for food and primary health care. Harvests of nutritive and medicinal products are usually linked to different seasons as well as the rituals endemic to this region. One such example is that of the Devil Tree (Saptaparna), which grows here abundantly.

By the month of Asāhīḍha – or Āti in the local Tulu dialect (it usually falls during mid-June to mid-July), rains would have already started. Usually, celebrations are prohibited during this month as it is considered inauspicious. This is probably because people generally succumb to several illnesses during the humid and rainy season. On the new moon day or Āti Amāvāsyā (Αti Amāsyā in Tulu), an annual ritual of drinking the concoction (kabāya) made from the bark of the Devil Tree (Hīlē/ Maddāhī in Kannada, Pālē/ Pāleda / Pālemhū in Tulu) is in practice. Consumption of the bitter kabāya of Pālē tree bark is believed to boost up the immune system and prevent diseases. This is a mass ritual observed by all irrespective of their religion, or community or caste.

The bark on the Pālē tree trunk is cleaned with water on the eve of the Āti Amāvāsyā. A holy thread is tied around the trunk while prayers are chanted beseeching the tree to store all the medicinal properties in its bark. On the new moon day, devotees rise early, bathe well before sunrise and remove a piece of the Pālē bark with a clean stone. Use of knife or other metal implements is believed to cause changes in the medicinal properties of the kabāya to be prepared. The inner fleshy part of the bark is peeled out and ground with pepper, cumin and garlic to prepare a bitter milky concoction. Heating white pebbles on charcoal and adding them to the concoction is believed to eliminate the toxic constituents. The kabāya is then filtered and (about 30 ml) consumed on an empty stomach. This is followed by a sweet dish made of raw rice, jaggery and coconut milk. Dosage is reduced to half or one-fourth for children depending on their age.

Every now and then, people extract the bark of the highly poisonous Strychnos nux-vomica (Kāsarasā in Kannada, Kāyor in Tulu) mistaking it in the darkness before dawn for Pālē and fall ill after drinking the sap from the wrong tree (e.g., see file:///F:/Mangalorean.com%20%20Mangalore%20News%20Articles%20Classification%202006%20%20Around%2020%20%20World.html). Rarely deaths have been reported as well. These days, restaurants sell the special kabāya on Āti Amāvāsyā to customers who cannot make it themselves.

**Further Reading:** Bhagya B, Ramakrishna A, Sridhar KR. 2013. Traditional seasonal health food practices in southwest India: nutritional and medicinal perspectives. Nitte University Journal of Health Science 3: 30-34. Downloaded from: http://nitte.edu.in/journal/March2013/TSHFP.pdf.

The bark of Saptaparna is distinctively dark-grey and studded with raised whitish dots on the surface. These are known as lenticels or areas that help in exchange of gases between the stem tissues and the ambient air.

The genus *Alstonia* was named by Robert Brown (1773-1858), the famous Scottish botanist (who, also pioneered the application of the microscope and made several discoveries including the cell nucleus, cytoplasmic streaming and Brownian motion), after Charles Alston (1685-1760), a professor at the University of Edinburgh. The specific epithet *'scholaris'* recalls the use of the tree's wood for making classroom blackboards and writing slates for children. The genus comprises about 45 species inhabiting tropical and subtropical Africa, Central America, Southeast Asia, Polynesia and Australia.

*Saptaparna* can grow to 40 m height. All parts of the tree are filled with a milky latex. The boles of the older trees are strongly fluted. The bark is dark greyish, somewhat rough,

Up to eight leaves occur in a circle at each node (left). More usually there are seven leaves, hence the name Saptaparna, saptachada, Satvin etc. The leaf is simple (undivided), elliptical-lanceolate (lance head-shaped), broader towards the tip and narrower towards the base. The petiole is short and the upper surface of the leaf is glossy and dark green compared to the lower surface, which is dull and lighter (right).
Box 2. Smell of the Devil tree: The Devil is in the Details!

For the most part of the year, it is like any other city tree – handsome, shade-giving, ignored, abused or even choked in concrete. But come October through December, the Devil tree literally comes “alive” by night. That is when it starts putting out creamy white flowers, filling the air at dusk with a distinct and unmistakable fragrance. It is this scent that beckons, nay compels you to stop and take notice of the tree. You can either love that smell or hate it, but you simply cannot ignore it! People describe the somewhat spicy and pungent fragrance variously as ‘strong’, ‘heady’, ‘choking’, ‘stinging’, ‘offensive’, ‘intoxicating’, ‘solidifying the air’, ‘fragrance of peace and contentment’ and so on. Those who like it can’t seem to have enough of it; there are others who complain of headaches and breathing trouble.

What is in the floral scent that evokes such a strong and polarized reaction from people? In a study from Vietnam, more than 34 components were identified, representing 92.5% of the oil. The major portion (35.7%) is made up of linalool, a terpene alcohol found in over 200 plant species, mainly in flowers (e.g., lavender, sweet basil and hops) and spices. Other major ingredients included cis- and trans-linalool oxides (14.7%), α-terpineol (12.3%), 2-phenylethyl acetate (6.3%) and terpinen-4-ol (5.3%). More than 90% of the volatile aroma compounds were oxygenated, and together contributed to its fragrant odour.

The scented night blooms have certainly added to strengthen the folkloric belief that the tree is a hangout for evil spirits. Tribal people would not pass or sleep under the ‘Devil tree’. However, blooming at dusk is more likely to be an adaptation to nocturnal pollinators. Unfortunately, the mechanism of pollination in this species has not been systematically studied. Nevertheless, there is reason to believe that the flowers could be pollinated by moths. Typically, ‘moth flowers’ are light-coloured or pale, occurring in clusters, made of long, narrow floral tubes, with copious and deep-seated nectar. With some exceptions, such flowers open at night and are overwhelmingly fragrant. The Devil tree has all these attributes. However, careful field studies are needed to verify the same. Meanwhile, there is evidence that *Apis dorsata* honey bees forage on the flowers of Saptaparna during the winter months. The honey produced is also suitable for human consumption.


Covered with lenticels, and rapidly yielding an abundant, bitter and milky sap when injured. The leaves are simple (not divided, although they appear to be), 10-20 cm long, 3-4.5 cm wide and arranged in a whorls of up to eight (more often seven) at the node. The leaf stalk (petiole) is short.
Inflorescence is produced at the tips of branches (left). Image on the right is a close-up of a young inflorescence in which flowers are just beginning to open.

Flowers bloom at dusk and are strongly perfumed. The corolla tube is greenish white with five lobes that are creamy white. A collar of hair or corona surrounds the opening of the corolla tube.
Box 3. Saptaparna: The Kerala Connection

Saptaparna is known in Kerala by several names: Pāla, Daivippāla, Ezhilampāla, Kotappāla and Yakshippāla. The tree has several ties with Kerala and Keralites. Here are two examples.

Pāla in Pālakkād

Pālakkād or Pālghāt is a city in the southern state of Kerala, located about 350 km north of the state capital Thiruvananthapuram, and is the administrative headquarters of Pālakkād district. It lies near the Pālghāt Gap, a pass or natural depression through the Western Ghats that run parallel to the west coast of India, and connects Kerala to the plains of Tamil Nadu to the east. It is a picturesque land of typical toddy palms (Borassus flabellifer – picture on left) or coconut palms (Cocos nucifera) and widespread rice paddy fields. The local language is a curious mixture of Malayalam and Tamil. Some etymologists trace the word "Pālakkād" from the word Pālai nilam, which means "dry lands". The commonly held belief, however, is that the name is a fusion of two Malayalam/Tamil words: Pāla (Alstonia scholaris), a tree found abundantly there, and Kādu, which means forest.


Pāla and Kummatikkali Dance Masks

Onam, the harvest festival of Kerala, is a grand carnival lasting for ten days during August-September each year and is traditionally celebrated with both fun and fervour. Among its characteristic features is the performance of vibrant dance forms. Ummattikali or Kummatikkali is one of the colourful mask dances performed in the northern districts of Kerala. During the festival of Onam, Kummati dancers don painted wooden masks, and sporting sprigs of grass and leaves go dancing on the street. The masks are usually made from the wood of Pāla (Alstonia scholaris), jack fruit (Artocarpus heterophyllus), Hog Plum (Spondias monbhiri) or the Coral tree (Erythrina indica). Each group of dancers comprises about eight to ten members, and each member wears a distinct and unusual costume. The most popular character in Kummatikkali dance is the 'Thalla' or ancient witch - the dancer who leads the group in dance, music and enactment. Most of the other characters represent various Hindu gods and goddesses and these are enacted by children donning spectacular masks. Kummati dancers are a sight to watch as they move around from house to house collecting jaggery, rice, or small amounts of cash. Onlookers, especially children, take great delight in their performance.


The leaf blade or lamina is obovate-oblong, leathery, with 25-40 lateral veins extending from the midrib. The leaf margin is smooth, its tip rounded or shortly pointed, and tapering towards the base. The upper (ventral) surface is dark green and shiny and the lower (dorsal) surface is light green and duller. The leaves (and less commonly also fruits) bear galls induced by a sucking insect (*Pauropsylla tuberculata*) related to aphids and cicadas.

In this image, the flower has been cut open to expose the internal features. A collar of hairs surrounds the entrance to the funnel-shaped or cylindrical corolla tube, which is also lined with downwardly projecting hairs. Although the stamens are tiny, they produce 5175 pollen grains per flower.

The leaf blade or lamina is obovate-oblong, leathery, with 25-40 lateral veins extending from the midrib. The leaf margin is smooth, its tip rounded or shortly pointed, and tapering towards the base. The upper (ventral) surface is darker and shiny and the lower (dorsal) surface is lighter and duller. The leaves commonly bear galls induced by a sucking insect (*Pauropsylla tuberculata*) related to aphids and cicadas.

The inflorescence is 10 cm long, produced in much-branched, compact, panicked cymes at the tips of shoots. The flowers are numerous, produced between October and December (sometimes April- May, and strongly perfumed. Each flower is pedicellate, about and about 1 cm long. The calyx is 5-lobed and green. The corolla tube is funnel-shaped/ cylindrical, and white, cream or greenish in colour. At the throat of the funnel there is a hairy
Visva-Bharati is the university that was founded in 1921 by Gurudev Rabindranath Tagore at Shantiniketan, a small town in the Birbhum district, West Bengal, about 180 km north of Kolkata. Today, it is a central university and an “institution of national importance” through an Act of Parliament. In keeping with its professed aim of realizing the intrinsic values of ancient education in India, the university tries to "create opportunities for invigorating and sustaining the manifold faculties of the human personality". In that sense, Visva-Bharati tries to blend tradition with modernity.

One of the traditions that it maintains to this day is the handing over of a bunch of Saptaparna leaves - locally known as “Chatim” or “Soptoporni” - to every graduating student at the convocation. Why leaves of this particular tree? There is a story behind that. It appears that in 1862 the present location of the university was a village known as Bhubandanga with lush green rice paddy fields bordered by rows of wild date palms and Chatim trees. In that year, Debendranath Tagore, father of Rabindranath, was on a boat journey to Raipur. He was a leading figure in the Indian Renaissance as well as a person of considerable spiritual stature.

Left: View of Chatimtala, a revered spot on the campus; Right: Atreyee Sahana receiving Chatim leaves as part of her MSc degree from the Governor of West Bengal Shri M K Narayanan at the 2012 Convocation. Handing over Chatim leaves to graduating scholars is an old tradition broken only twice in history – when Prime Ministers Vajpayee and Singh attended the Convocation in 2001 and 2008 respectively. On both occasions, security was cited as the reason.

– and hence addressed as “Maharshi”. Smitten by the sylvan prospect unfolding before him Debendranath decided to step off the boat and rest a while at Bhubandanga. He sat in a glade of Chatim trees to offer his evening prayers. When he finished his meditation, he was filled with so much peace and happiness that he soon bought 20 bighas (2.676 ha) of land to set up a spiritual retreat there. He named it Shantiniketan (“abode of peace”). Later, Rabindranath Tagore expanded the area and established the Visva-Bharati University.

The spot where the ancient Chatim trees stood was named Chatimtala and it soon became a favourite of Gurudev too. Although the old trees are now no more and have been replaced with new saplings, Chatimtala symbolizes the genesis of Shantiniketan and is hence revered on the campus. Prayers are held there on the Convocation day and to commemorate this reverence graduating scholars are ceremoniously handed a bunch of seven Chatim leaves. Apparently the school leaving function is held every year, but the University convocation is held once every 3-5 years. Exactly how many leaves are required for this event could not be ascertained in spite of my best efforts. However, I was assured that there are enough trees in and around Shantiniketan to meet the demand.

By the way did you know that the Chatim is also the State Tree of West Bengal?


Image source: Left. [http://koyelischakraborty.blogspot.in/2013/05/destination-india_16.html][4]; Right. Ms Atreyee Sahana, Department of Zoology, University of Delhi, Delhi.

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[1]: http://www.visvabharati.ac.in/History.html
[2]: http://www.westbengaltourism.gov.in/web/guest/shantiniketan
[4]: http://koyelischakraborty.blogspot.in/2013/05/destination-india_16.html
From each flower emerge a pair of fruits (left), technically known as “follicles”. These are initially green and become 15-30 cm long and pendulous. At maturity, they turn brown and dehisce along one seam to expose the seeds (middle and right).

The seed is flat, almost strap-like, rectangular and brown. At each of its two ends a tuft of creamy-white hairs is attached. Seeds are released when the follicles dehisce and carried away by currents of air, thus getting dispersed.
Box 5. Saptaparna in Traditional and Folk Medicine

Saptaparna has been known as a medicinal plant since long in India. The great Ayurvedic physician Charaka used a paste of Saptaparna bark in ointments for chronic skin problems, and in prescriptions for urinary diseases. Another ancient physician and surgeon Sushruta prescribed the drug internally as well as externally in urinary diseases, poisoning, fever, malignant ulcers, leprosy and other virulent skin diseases and fistula. He used a decoction of Saptaparna as a specific remedy for polyuria (a condition defined as excessive or abnormally large production or passage of urine - at least 2.5- 3.0 l in 24 hr; not to be confused with polyurea). The Ayurvedic Pharmacopoeia mentions the bark of *Alstonia scholaris* or Saptaparna as useful in colic, abdominal tumour, worm infestation, leprosy, and *jwara* (pyrexia). It has been regarded as a bitter tonic having an astringent (causing contraction of skin and other body tissues), anthelmintic (expelling parasites from the body) and galactogogue (increasing milk production) properties. It is said to be useful in heart diseases, asthma, chronic diarrhoea, and to stop bleeding from wounds. The fresh bark juice with milk is said to be administered in leprosy and dyspepsia as well as to treat ulcers. The bark is also used in Homoeopathy (tincture to third potency) in weak digestion, anaemia, low fever often with diarrhoea, dysentery and as a tonic after exhausting fever.

The tree has been used in traditional Chinese medicine (TCM) to treat headache, influenza, malaria, bronchitis and pneumonia. Various alkaloids from its bark and leaves have been claimed as active ingredients. An attempt has been made to assess the genetic and alkaloid diversity within *A. scholaris*. The leaf extract has been used as an over-the-counter TCM drug to relieve cold and tracheitis (bacterial infection of the upper airway in children, with coughing and high fever).

The plant has also been employed by ethnic people in the north-eastern states and elsewhere. Parts of the plant have been used in intermittent fever, skin diseases, ulcer, and cough. The bark has been used for tuberculosis, as anti-diarrhoeal and antidysenteric, in post-delivery complaints, in malarial and pneumonial fever and so on.

The phytochemical constituents of *A. scholaris* have been extensively investigated, with nearly 400 compounds isolated and characterized to date, including alkaloids, terpenoids and flavanoids. Almost all the plant’s parts – bark, leaf, flower, fruit – contain active fractions. The alkaloids include alstonidine, alstonine, chlorogenic acid, chlorogenine, ditain, echitamine and echitanin, while the triterpenoids include lupeol linolate and lupeol. The major chemical constituent of the bark is echitamin e. The minor alkaloids are scholarine, (+)-lochneridine, 17-O-acetyechitamine, angustilobin B acid, and β-sitosterol.

The significant pharmacological activities that have been studied include: antimicrobial, anti-diarrhoeal, antimalarial, hepatoprotective, anticancer, anti-inflammatory, immunomodulatory, antiasthmatic, anti-fertility, wound healing, anti-ulcer, anthelmintic, and antioxidant.

However, clinical trials are necessary to validate these therapeutic claims.


**Image of Alstonia scholaris bark powder:** http://www.101herbs.com/alstonia-scholaris.html
collar or corona. Inside the tube there are downwardly pointed hairs. There are five stamens attached to the corolla tube. Each flower produces 5175 pollen grains². The two ovaries are free (not fused), but the styles are united, ending in a somewhat bi-lobed stigma. The ovaries after fertilization develop into a pair of fruits termed as "follicles". Each follicle is 15-30 cm long and 4-6 mm across cylindrical and pendulous, green initially, turning brown at maturity when it dehisces along a single suture to release numerous seeds. **Seeds** are flat, papery, oblong and brown, 4-5 mm x 1-1.2 mm with a tuft of hair at each end. They do not taper to a point at either end. The hairs facilitate dispersal by wind.

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**Box 6. The Wooden Masks of Bali**

Masks play a unique cultural role in the Indonesian island of Bali. Dances and theatre not only serve as entertainment but are also a component of religious rituals. Sometimes, they are positioned as the ritual itself. For this reason, Balinese art is so rich and diversified. This gets reflected in the diversity of the handicrafts and especially the masks that are worn during sacred dance rituals. The masks are objects of deep power and mystical significance. Most mask carvers make masks for commercial use as well. Only a few carvers are permitted to undertake the creation of the sacred masks. Although there are several significant masks used in Balinese rituals, the most important ones are Barong and Durga/Rangda. Always together, they represent the fundamental duality: male and female energies, harmony and imbalance, and good versus evil.

The masks are made of wood, usually from the Kenanga tree (Canaga odorata) that belongs to the custard apple family or from the Pulé tree (Alstonia scholaris). While carving a sacred mask, the carver wears the Balinese traditional dress. Carving may take a month and the elaborate costume that goes with it may require two more months. The surface of the mask is painted with organic and natural paints comprising pig bones, plant pigments, clay and carbon. It is then decorated with gold leaf, horse hair, jewels, mirrors boar tusks etc. Masks are also finished with batik painting. Balinese masks make wonderful souvenirs (Image on the left: http://indonesiasouvenirs.files.wordpress.com/2014/02/balinese-mask.jpg).

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