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World Journal of Biology and Medical Sciences

Published by Society for Advancement of Science®

ISSN 2349-0063 (Online/Electronic)

Volume 7, Issue-1&2, 77-83, January - June, 2020

Journal Impact Factor: 4.197



WJBMS 07/02/15/2020

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A Double Blind Peer Reviewed Journal / Refereed Journal

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REVIEW ARTICLE

Received: 12/05/2020

Revised: 29/06/2020

Accepted: 30/06/2020

Betel Leaf: An Ancient Indian Herb of Versatile Care and Cure

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ABSTRACT

From using it in prayers and religious ceremonies to eating it in the form of a 'paan', betel leaves contain many curative and healing health benefits. The leaves are full of vitamins like vitamin C, thiamine, niacin, riboflavin and carotene and are a great source of calcium. An analysis of the betel leaf shows it to consist of moisture 85.4 per cent, protein 3.1 per cent, fat 0.8 per cent, minerals 2.3 per cent, fibre 2.3 per cent and carbohydrates 6.1 per cent per 100 grams. Its minerals and vitamin contents are calcium, carotene, thiamine, riboflavin, niacin and vitamin C. Its calorific value is 44. . Recent studies have shown that betel leaves contain tannins, sugar and diastases and an essential oil. The essential oil is a light yellow liquid of aromatic odour and sharp burning in taste. It contains a phenol called chavicol which has powerful antiseptic properties. The alkaloid arakene in it, has properties resembling cocaine in some respects.

Keywords: Arakene, Calcium, Carotene, Thiamine, Riboflavin, Cholesterol, Vitamin C. Calorific value and Tannins.

INTRODUCTION

The use of betel leaf can be traced as far back as two thousand years. It is described in the most ancient historic book of Sri Lanka, *Mahavamsa*, written in Pali. Betel is a native of central and eastern Malaysia. It spread at a very early date throughout tropical Asia and later to Madagascar and East Africa. In India, it is widely cultivated in Tamil Nadu, Madhya Pradesh, West Bengal, Orissa,

Maharashtra and Uttar Pradesh. Offering betel morsel (*pan-supari*) to guests in Indian subcontinent is a common courtesy.

The betel plant is a slender, aromatic creeper, rooting at the nodes. The branches of the plant are swollen at the nodes. The plant has alternate, heart-shaped, smooth, shining and long-stalked leaves, with pointed apex. It has five to seven ribs arising the base; minute flowers and one-seeded spherical small berries. Betel leaf's medicinal uses are hugely underrated, but highly efficient. Take a dive into the world of betel leaf uses and get amazed!

Betel leaf is the one who plays a role in promoting the body health. This leaf belongs to Piperaceae family, which includes pepper and kava. It is commonly consumed by Asian people as betel quid or in paan, with Areca nut and/or tobacco. Moreover, in Hindi, Betel leaf is known as 'Paan Ka Patta' while in Telugu it is usually called as 'Tamalapaku'. Further, the plant can grow up to 1 m long. It has waxy green and has heart-shaped leaves which if the leaves are crushed, it will have the cool peppery scent. In addition, this herb is popular in India, Thailand, Vietnam, and Indonesia. Besides, betel leaf has a heart-shaped and was used as a medical treatment since many years ago (Toprani and Patel, 2013).

In India, Betel leaf takes part to be consumed after the meal. People there used to chew betel leaves to get the health benefits of it. Also, it is believed that betel leaf has an important role to detoxicate blood and providing antioxidant nutrients. It is proven by the usage of these leaves to promote cardiovascular function and being such a great anti-inflammatory. Indeed, betel leaf has a good purifying function to the body. In India, Betel leaf (BL) plays an important role since ancient culture. Its use in India dates back to 400 BC. As per ancient books of Ayurveda, Charaka, Sushruta Samhitas, and Kashyapa Bhojanakalpa, the practice of chewing BL after meals became common between 75 AD and 300 AD. Toward the 13th century, European traveler Marco Polo recorded betel chewing among kings and nobles in India.

Importance of BL has been described in ancient books of Ayurveda. Use of BL was known for centuries for its curative properties. In Chinese folk medicine betel leaves are used for the treatment of various disorders and claimed to have detoxification, antioxidation, and antimutation properties. There are number of research experiments on BL, where the leaf extract, fractions, and purified compounds are found to play a role in oral hygiene, and to have various properties including anti-diabetic, cardiovascular, anti-inflammatory/immunomodulatory, anti-ulcer, hepato-protective, anti-infective, etc., Patents were also awarded for some of the biological activities like anti-inflammatory, anti-cancer, and immunomodulatory associated with the leaf extracts and purified compounds.

There is archaeological evidence that the betel leaves have been chewed along with the areca nut since very ancient times. It is not known when these two different stimulant substances were first put together. Betel leaves are used as a stimulant, an antiseptic, and a breath-freshener, whereas areca nut was considered as aphrodisiac. Chewing habits of people have changed over time. The betel leaves are chewed together in a wrapped package along with areca nut and mineral slaked lime. Catechu (kattha) and other flavoring substances and spices were also added subsequently. For many decades, tobacco has also been added to the BL package. The practice of chewing BL has been decreasing progressively and now the Quid comprising of tobacco, areca nut, and slaked lime (gutkha) is generally in practice.

Betel leaf is essentially very helpful in improving GERD. It keeps the duodenum free of harmful free radicals and toxins. This further reduces acidity caused due to imbalanced PH levels of the stomach. Optimal PH levels ensure that bloating is eased. Fowl gas passes through sphincter contraction and expansion. This ensures that gastric reflux is eased. Hence, gastric pain subsides easily with constant use. Decreased appetite is also an outcome of an upset stomach. Normal pH levels trigger the hunger hormone to get secreted in optimal amounts. Betel leaf is highly capable of restoring the normal pH levels of the stomach by flushing out all the toxins. Hence, it increases appetite and promotes health (Shetty et al., 2013).

The betel leaf helps to refresh breath, protects against germs, bacteria and other oral pathogens in the mouth. When you chew a betel leaf, it cleanses the mouth. It prevents tooth decay. It helps to

strengthen the gums and reinforces the teeth. It prevents oral bleeding. This protective shield can be enhanced by gargling, morning and night, daily, with one drop of betel leaf oil mixed in one cup of warm water. You can also boil some betel leaf in water and use it as a rinse and gargle. It also helps to treat sore mouth.

Betel leaf is very good for treating respiratory problems. It helps to treat cough and cold. It also brings much relief to people suffering from chest and lung congestion and asthma. It even helps to cure breathing problems. You can apply mustard oil to the leaf, warm it and keep it on the chest to cure congestion. Alternatively, boil a few leaves with cardamom, cloves, cubeb and cinnamon in two cups of water. Reduce it up to 1 ½ cup. Strain and drink this concoction three times a day to find instant relief.

Betel leaves are amazing ways of easing constant cough. They come loaded with the goodness of antibiotics. These antibiotics ease phlegm and also reduce the inflammation caused due to constant coughing. One of the best betel leaf medicinal uses is that it also acts as an amazing remedy for bronchitis. It reduces inflammation all along the bronchial chord and lungs. This leads to dilated phlegm. Hence, the chest congestion is eased that further improves breathing (Sadasivan et al., 1978).

Betel leaf is an amazing antiseptic as well. It is rich in polyphenols, especially chavicol. Thus, it offers dual protection from germs. Being a good antiseptic, it can be applied on cuts to kill germs. And since it is loaded with polyphenols, it is used for treating inflammation such as arthritis and orchitis. Local application of the betel leaf acts a pain reliever and an anti-inflammatory agent. Betel leaf is also an amazing anti-fungal remedy. Fungal infections commonly occur on moist body parts. Thus, betel leaf makes an amazing natural remedy that prevents fungal infections naturally.

Betel leaf is a good remedy for people suffering from lower back pain or lumbago. A hot poultice of betel leaves or juice mixed with refined coconut oil applied on the loins gives good relief. Massaging the lower back with betel leaf oil and a carrier oil helps to ease the pain. It also provides relief from muscular tension pains, redness, and swelling.

Betel leaf is a good diuretic. Crush a betel leaf and extract its juice, mix it with a little diluted milk and drink it. This helps to treat water retention in the body. It also helps in easing urination for people suffering from scanty or obstructed urination. Betel leaf is a good remedy for people suffering from lower back pain or lumbago. A hot poultice of betel leaves or juice mixed with refined coconut oil applied on the loins gives good relief. Massaging the lower back with betel leaf oil and a carrier oil helps to ease the pain. It also provides relief from muscular tension pains, redness, and swelling (Mori et al., 1979).

Betel leaf is a good diuretic. Crush a betel leaf and extract its juice, mix it with a little diluted milk and drink it. This helps to treat water retention in the body. It also helps in easing urination for people suffering from scanty or obstructed urination. Betel leaves medicinal properties includes healing of wounds and infection. Crush a few leaves, extract the juice, and apply it on the wound or infection. Then put a betel leaf over it and wrap it with a bandage. The wound will heal within two days as it prevents the growth of destructive microbes. If you are feeling sluggish or suffering from nervous exhaustion, the betel leaf is a good remedy to improve alertness. A teaspoon of betel leaf juice with honey acts as a tonic. It can be taken twice a day. It improves mental functioning and treats debility. It also energizes and motivates people, thereby curing them of their sluggishness.

For people suffering from headache, the betel leaf is a good cure. It has analgesic and cooling properties. You can apply the betel leaf on your forehead to ease headaches. You can also use betel leaf oil for the same. Betel leaf is a good remedy for acne, black spots, etc. Its antimicrobial properties help to treat skin ulceration, allergies, itchiness, and body odor. Crush a few betel leaves and extract its juice, mix with a little turmeric and apply on the acne and allergies to find good relief. Betel leaves boiled in water can be used for washing face and skin to treat and prevent skin problems. Regular usage will help clear spots and acne within a few days. The powerful antimicrobial and antiseptic properties help to treat skin infections (Warnakulasuriya et al., 2002).

Earaches can be irritating and painful. The betel leaf juice or oil is a good remedy for this problem. Mix betel leaf juice or oil and coconut oil and put two drops in the ear. You will find instant relief. For women suffering from vaginal itching and vaginal discharge, betel leaf is a good home remedy. The betel leaves are boiled and are used as a genital wash. In some countries, it is widely used by women after giving birth as it causes genital shrinkage. The betel leaf helps to prevent body odour. You can add the juice of betel leaf or oil in your bath water to remain fresh the whole day. You can also drink a concoction made of few betel leaves soaked in boiled water, with a spoon of white sugar added to it. It prevents the unpleasant smell of perspiration and menstruation.

Betel leaf is a good remedy for nosebleed. Many young children suffer from it when they play outdoors in the hot sun. The betel leaf helps to stop the blood flow. Roll a fresh betel leaf and insert it in the nosebleed. It takes about 30 minutes to stop the blood flow. The betel leaf oil has a phenol called chavicol, which has antiseptic properties. It is used for treating inflammation in serious conditions such as arthritis and orchitis. The betel leaf oil helps to refresh breath, protects against germs, bacteria and other oral pathogens in the mouth. It prevents tooth decay. It helps to strengthen the gum and reinforces teeth. It prevents oral bleeding. This protective shield can be enhanced by gargling, morning and night, daily, with one drop of Betel leaf oil mixed in one cup of warm water. The betel leaf can cure and prevent various ailments and illnesses. It is better to use these home remedies than taking prescription drugs, which can be costly and have various kinds of side effects. Betel leaf is available in most parts of the world, and if not, then the essential oil of the betel leaf too can be used to reap the medicinal benefits of betel leaf. However, be cautious of not consuming it with tobacco and other hazardous products.

NUTRITIONAL COMPOSITION OF BETEL LEAVES

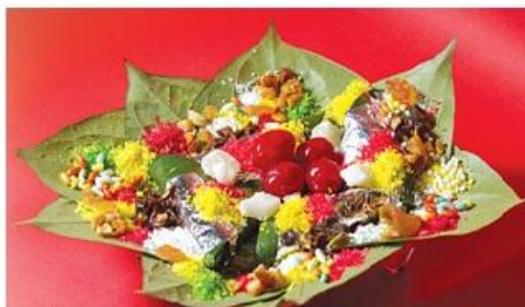
Approximately 85-90% of betel leaf is water, which means it has high moisture content and low calorie count. About 100 grams of betel leaves contain just 44 calories. It contains 0.4-1% fat and 3-3.5% protein, which makes it a low source of fat and moderate source of protein. Furthermore, the betel leaf contains moderate amounts of essential nutrients such as iodine (3.4 mcg/ 100 grams), potassium (1.1-4.6%), vitamin A (1.9-2.9 mg/ 100 grams), vitamin B1 (13-70 mcg/ 100 grams), vitamin B2 (1.9-30 mcg/ 100 grams) and nicotinic acid (0.63-0.89 mg/ 100 grams). Besides these nutrients betel leaves contain essential oils and chemical components such as betel oil and chavicol, betelphenol, eugenol, terpene and campene. These chemical components possess medicinal properties and help in the treatment and management of various diseases and disorders (Dave et al., 1992).

THERAPEUTIC BENEFITS OF BETEL LEAVES

Various anti-diabetic medicines have side-effects on the liver and kidneys in the long run. Research has revealed that dried betel leaf powder has the ability to reduce blood glucose levels in individuals with newly diagnosed type 2 diabetes mellitus and this herbal remedy comes without any side-effects. Individuals with diabetes exhibit high levels of oxidative stress due to continuous high blood glucose levels (hyperglycemia). Such high levels of blood glucose depletes the antioxidant defense system and further inactivate antioxidant enzymes. Betel leaf is a great source of antioxidant that fights oxidative stress by scavenging free radicals. Thus, betel leaf helps in lowering high blood glucose levels and aids in the management of diabetes mellitus.

High cholesterol level is a risk factor for heart disease and stroke. Studies have found that betel leaf helps in lowering high levels of total cholesterol, triglycerides, low-density lipoprotein (LDL) cholesterol and very low-density lipoprotein (VLDL) cholesterol. Furthermore, it also helps to increase high-density lipoprotein (HDL) cholesterol levels. Such a lipid-lowering effect of betel leaf is attributed to the presence of eugenol, a natural antioxidant that neutralizes free radicals. Eugenol further inhibits the biosynthesis of cholesterol in the liver and reduces lipid absorption in the intestine. It further increases the catabolism of "bad" LDL cholesterol. High levels of cholesterol and triglycerides are mobilized from plasma to the liver and then they are eliminated in the form of bile acids. Thus, through various mechanisms betel leaves help in lowering high lipid levels. Betel levels when consumed with tobacco and betel nuts increase the risk of oral cancer. However, betel leaf

alone is a reservoir of phenolic compounds that possess antioxidant, anti-mutagenic, anti-proliferative and anti-bacterial properties. Studies have revealed chemo-preventive potential of betel leaves against various types of cancer. Furthermore, betel leaves contain an array of phytochemicals (health promoting plant chemicals) that possess cancer-fighting benefits. Oxidative stress plays a huge role in the pathophysiology of cancer. Betel leaves are an excellent source of antioxidants that neutralize free radicals and fight oxidative stress. It further inhibits the growth of cancer cells and its spread to different organs of the body (Merchant et al., 2000).



Essential oil present in betel leaves possess anti-bacterial activity against pathogenic bacteria namely, *Escherichia coli*, *Staphylococcus aureus*, and *Pseudomonas aeruginosa*. Furthermore, the presence of phenolics and phytochemicals in betel leaves help to protect against both gram-positive and gram-negative bacteria. Studies have observed that betel leaves help in the process of wound healing. It was further found that betel leaf extract has a very strong effect on wound healing in case of burn wound. Increased levels of oxidative stress causes delay in wound healing. Betel leaf is a great source of antioxidants. These antioxidants reduce oxidative stress and further help in quick

wound healing. Thus, betel leaf acts as a protective agent in wound healing by increasing the wound contraction rate and total protein content.

Asthma is recognized as an inflammatory condition. Betel leaf possesses antioxidant and anti-inflammatory properties and thus, it helps in the treatment and management of asthma. Histamine is an inflammatory mediator that plays a major role in causing asthma. Histamine causes bronchoconstriction, a sign of asthma in which airways in the lungs get constricted due to tightening of smooth muscles. Research has found that anti-histaminic activity of betel leaf may be a causative agent in lowering bronchial asthma cases. Furthermore, betel oil and polyphenols present in betel leaf possess anti-inflammatory properties that further helps in lowering asthma cases. Depression is a psychiatric disorder that affects approximately 5% population of the world. Research has revealed that besides anti-depressant drugs, herbal remedy such as chewing betel leaves have been used since ancient times for its CNS (central nervous system) stimulant activity. It was further found that chewing betel leaves produces a sense of well-being, a feeling of happiness and heightened alertness. Furthermore, betel leaves contain aromatic phenolic compounds that stimulate the release of catecholamines. A strong link is present between low level of catecholamines in the body and increased risk of depression. Therefore, chewing betel leaves is an easy way to keep depression at bay (Wen et al., 2010). Pathogens present in the mouth are responsible for dental infections and dental caries. Studies have observed that chewing betel leaves can inhibit the growth and activity of bacteria. Betel leaf is very popular as a mouth freshener and it can be used as a substitute for drugs that are used to treat oral or dental infections. When foods and drinks high in sugar are consumed, acid reacts with bacteria present in dental biofilm. Betel leaf protects against dental caries by inhibiting the acid produced by salivary bacteria.

Studies have found that chewing betel leaf is an ancient traditional remedy used for treating gastric ulcers. Agents that cause ulcer damage the inner lining of the gut, reduce the production of gastric mucus and increase the level of oxidative stress. Betel leaves inhibit the formation of gastric lesions, increase the production of gastric mucus (important factor that protects against ulcer causing agents) and reduce the volume of gastric acid secretion. Phytochemicals and polyphenols present in betel leaf possess antioxidant and anti-ulcerogenic properties. They protect the inner layer of the gut against toxins and other irritants and thus reduce the overall damage. Studies have found that during ancient times in rural regions of Malaysia betel leaves were used as an anti-malarial remedy. Terpenes, a health promoting compound present in betel leaf possesses anti-malarial properties. Flavonoids present in betel leaf possess significant anti-parasitic activity against different parasite strains of malaria. Thus, betel leaves contain novel anti-malarial compounds that can be used in the fight against malaria (Sharma, Dinesh, 2001).

Betel leaves or paanpatta are eulogized by ayurvedaacharyas for their immense medicinal properties. Betel plant or *Piper betle* is a vine which belongs to Piperacea family. This vine has heart shaped leaves and is mostly grown in South East Asia. In Sanskrit it is known as *Nagavallari* (a vine which creeps like a naga or serpent) or *Sapthashira* (a leaf which contains seven veins). The health benefits of betel leaves are masked due to its usage in Quid. A quid is a small parcel in which areca nuts, slaked lime, tobacco powder etc are wrapped in betel leaf. These Quids are chewed to get a high. A large population of South East Asia consumes quids which are known to cause cancer. This may be due to irritants which are used with betel leaves. Many studies have shown that betel leaves have anti cancer properties. According to principles of ayurveda these leaves are light to digest and hot in potency. They balance vata and kapha, but vitiate pitta.

CONCLUSION

Betel leaf is an amazing analgesic that offers relief from pain. It can be used to alleviate pain caused due to cuts, bruises, rashes, inflammation (internal as well as external), indigestion, constipation, etc. You can simply make a paste of betel leaf and apply to it the bruised area (meant for external application). You can also chew betel leaves and drink its juice to get relief from internal pain. Betel leaf contains the goodness of antioxidants. Antioxidants clear free radicals from the body. This

restores the normal PH level of an upset stomach. As a result, constipation is eased. You can simply chew the betel leaf and ingest its juice on an empty stomach each day to get relief from constipation. Another way is mincing betel leaf with water and storing it overnight. Drink the stored water on an empty stomach the next day. Betel leaf is good for digestion. Its carminative, intestinal, anti-flatulent, and gastroprotective properties made chewing the leaf after a meal very popular. The essential oil can be massaged on the stomach as it helps in the secretion of digestive acids and gastric juices. For children suffering from indigestion, boil betel leaf with a little pepper in water. Strain it, and give two teaspoons of this mixture to children twice a day for an instant cure. Betel leaf thus increases the body's metabolism. This triggers circulation and stimulates the intestines to absorb vital minerals and nutrients. Waste gets removed easily through better sphincter performance. Better sphincter performance is also an outcome of the stimulation caused by betel leaf.

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