

## REFERENCES

### CASHEW NUT

### EAST INDIAN ALMONDS

*Anacardium occidentale*

*Cassuvium pomiferum*

1. Potter (B5) says that the habitat is West Indies and Tropical America. The nut is used. It is nutritive. The roasted kernels are edible and of agreeable flavour. The fresh juice of the shell is acrid and corrosive, and the West Indian negroes use it for warts, corns, etc. The tree bark has proved efficient in certain malarial fevers not yielding to treatment by quinine.

2. Stuart (B28) refers to the plant as *Anacardium occidentale* and says that although only the nut or kernel is widely known, this tropical tree provides a wide variety of uses and products, and is of some importance in native medicine in Africa and the Americas. It has yellow pink flowers, which are followed by fleshy edible receptacle (cashew apple) partly enclosing the kidney shaped nut.

It contains protein, niacin, magnesium, iron, anacardic acid, cardol. The nut, oil, tree bark, and fruit are used. The nut or kernel nutritive, with a high protein content. The tree bark once used in certain malarial fevers and fresh shell juice removes warts and corns. Juice from the fruit made into wine and spirit. Milky secretion from incised tree makes indelible marking ink. Non-drying lubricant oil is made from the nut. Ammonium salts of resin form hair dye. The oil from fresh shell strongly vesicant, causing skin blisters.

3. Trease and Evans (B37) says under non-medicinal toxic plants and pesticides that there are phytochemical groups of compounds having recognised molluscicidal activity. These are the isobutylamides of the Asteraceae, Rutaceae and Piperaceae (see Johns et al., *Phytochemistry*, 1972, **21**, 2737), steroidal glycoalkaloids (***Solanum mammosum***), anthroquinones (***Morinda lucida***, Rubiaceae) and flavonoids of various families. Some of the most active substances known are the unsaturated anacardic acids of cashew nut shells (***Anacardium occidentale***), but unfortunately field trials carried out in Mozambique showed the treated water to give rise to dermatitis.

4. Grievés (B6) refers to ***Anacardium occidentale*** (Syn. ***Cassavium pomiferum***), where the nut is used. It is grown in Jamaica, West Indies, and other parts of tropical America. It is a medium sized tree, beautiful, and not unlike the walnut tree, with oval blunt alternate leaves and rose scented panicles of bloom - the tree produces a flesh receptacle, commonly called an apple, at the end of which the kidney-shaped nut is borne; the end of it which is attached to the apple, is much bigger than other. The outer shell is ashy colour, very smooth, the kernel is covered with an inner shell, and between the two shells is found a thick inflammable caustic oil, which will raise blisters on the skin and be dangerously painful if the nuts are cracked with the teeth.

Two peculiar principles have been found: anacardic acid and a yellow oleaginous liquid Cardol.

Medicinal uses and action: The oil must be used with great caution, but has been successfully applied to corns, warts, ringworms, cancerous ulcers and even elephantitis, and has been used in beauty culture to remove the skin of the face in order to grow a new one. The nuts are eaten either fresh or roasted, and contain a milky juice which is used in puddings. The older nuts are roasted and salted and the dried and broken kernels are sometimes imported to mix with old

Madeira as they greatly improve its flavour.

In roasting, great care must be taken not to let the fumes cover the face or hands, etc., as they cause acute inflammation and external poisoning.

Ground and mixed with cocoa the nuts make a good chocolate. The fruit is a reddy yellow and has a pleasant sub-acid stringent taste; the expressed juice of the fruit makes a good wine, and if distilled, a spirit much better than arrack or rum. The fruit itself is edible, and its juice has been found of service in uterine complaints and dropsy. It is a powerful diuretic. The black juice of the nut and the milky juice from the tree after incision are made into an indelible marking-ink; the stems of the flowers also give a milky juice which when dried is hard and black and is used as a varnish. A gum is also found in the plant having the same qualities as gum-arabic; it is imported from South America under the name of Cadji gum, and used by South American bookbinders, who wash their books with it to keep away moths and ants. The caustic oil found in the layers of the fruit is sometimes rubbed into the floors of houses in India to keep white ants away.

The Oriental **Anacardium** or Cashew Nut (**Semecarpus anacardium**), a native of India, has similar qualities to the West Indian Cashew, and is said to contain an alkaloid called chuchunine.

Ammonium anarcadate (anacardate? - ACD). This is the ammonium compound of beta and delta resinous acids of **Anacardium occidentale** (Cashew Nut), and is used as a hair dye, but cannot be used with acids, acid salts, or acetate of lead.

5. Bianchini (B102) says that the Cashew (**Anacardium occidentale**) which is commonly called the "Pear Cashew" can be included among the plants producing dry fruits, although after looking at the pear-shaped body, an enormously overgrown fruit stalk, supporting the cashew nut, it may seem more proper to classify it among the plants producing pulpy fruits. The part constituting the false fruit (cashew apple) is tasty and juicy and, when fully ripe, can be eaten raw, or sliced and sweetened with sugar. The dry fruit called the "nut", which is the true fruit, must be freed from the shell, which contains a very caustic oil, and it can then be eaten raw or roasted quickly under embers, or broiled. In Brazil the fermented cashew nut fruit produces a kind of wine, which is famous locally, and also a local vinegar called anacard.

6. Davidson and Knox (B104) says that one of the strangest fruits of the world is cashew (**Anacardium occidentale**). It has two parts; at the stem end a cashew apple and projecting from the other end a cashew nut. Strictly speaking, the "apple" is the receptacle for the true fruit, which is the nut. Cultivation is now widespread. The portuguese colonists, finding the cashew in Brazil, took it to southeast Asia.

7. Milliken (B134) says that **Anacardium occidentale** L., is a tree cultivated around villages. It is widely cultivated throughout the tropics, native to Atlantic coastal South America. Called "hiri" by the Waimiri Atroari Indians. The fleshy pedicel is edible. Called "caju" in the local vernacular. Cashew is the name by which we know it.

An alcoholic beverage is made from the fruit of this tree in northeast Brazil. The Tikuna Indians of Colombia drink the juice of the pedicel to cure influenza. The seed is edible and nutritious when roasted. A resinous oil from the pericarp, known as cardol, is used by the Wayapi Indians of French Guiana to cauterise splits in the soles of the feet. This oil is used in the varnish,

plastics and insecticide industries, in the manufacture of brake blocks and has been used to treat malaria, toothache and syphilitic ulcers. The gum exuded from the bark has been used as a substitute for gum arabic in book binding, as indelible ink, as a cold cure (in Cuba), and is attributed fungicidal and insect-repellant properties. A decoction of the bark is held to act as contraceptive in Colombia and as a cure for sore throat and tumours in Brazil. It is used in French Guiana as a diarrhoea treatment by the Créoles and a cure for infantile thrush by the Wayapi Indians, and in the Distrito Federal of Brazil as a remedy for liver disorders. In Java and Malaya, the leaves are eaten raw with rice.

This species contains alkaloids, and possesses anti-bacterial properties. The multifarious uses made of this plant in Africa, which include preservation of fishing nets with cardol in Zanzibar and use of the bark as a fish poison in the Congo, are summarised by Watt & Breyer-Brandwijk (1962).

8. Medicinal and aromatic plants section. The Pharmaceutical Journal. 10.10.1992, p.474. The medicinal and aromatic plants section of the International Pharmaceutical Federation held a symposium on recent developments in plant research on 17.09.93 during the FIP congress in Lyons, France.

#### Systemic anti-inflammatory action of plants.

Research into the anti-inflammatory action of various plants was described by Prof. Esther Marin Parés (Dept. of pharmacodynamics and pharmacognosy, faculty of Pharmacy, University of Barcelona). She said that reduced side effects were often among the advantages when plants were used in a traditional way for their anti-inflammatory activity.

In India's Ayurvedic system of medicine, an oleo-gum-resin called guggal, which contained boswellic acid and was obtained from the shrub **Boswellia serrata**, had given good results in the treatment of rheumatoid arthritis and had demonstrated good tolerance. Boswellic acid and glycyrrhetic acid were thought to modify the immunological mechanism. Other plants used in India against rheumatism included **Cardiospermum halicacabum** and **Cassia occidentalis**.

**Euphorbia prostate** was used in India against bronchitic asthma and in North America against snake bite. Knowledge from the folk use of **Ananas comosus** (Pineapple) in Central and South America has resulted in the isolation of bromelain and its use as an oral treatment of conditions such as rheumatoid arthritis and thrombophlebitis and in plastic surgery. The isolation and activity of magnoshinine and magnosaline from **Magnolia salicifolia** flowers had confirmed the traditional use of these against paranasal sinusitis.

Enzyme studies had been used to detect some anti-inflammatory compounds, and galangin, 5,7-dihydroxyflavone from **Alpinia officinalis** (Zingiberaceae) was one of the most potent cyclooxygenase inhibitors. Others with this activity were cardanol from **Schinus terebinthifolius**, cardol from **Anacardium occidentale**, and urushiol and gallotannins from **Rhus toxicodendron**. Lipoxygenase inhibitors were spilanthol (**Spilanthes oleracea**) and the isobutylamide of dodecatetraenoic acid (**Echinacea purpurea**). Helenaline, a sesquiterpene lactone inhibited prostaglandin synthetase at  $10^{-3}$ M, compared with indomethacin inhibiting it at  $10^{-4}$ M.

9. In the paper from Alban Muller (L'Ami May 1994, No.7). The Tupi natives of Brazil called

the cashew "acaju". The name became "caju" in Portuguese, "cashew" in English, "Cajuil" in Spanish and "cajou" in French.

The cashew tree was discovered by the Portuguese and introduced in their African and Asian colonies. Nowadays, India is by far the largest producer of cashew nuts.

The cashew tree (**Anacardium occidentale**, Anacardiaceae) is an evergreen tree native of tropical areas. It is very ramificated with a dense foliage and globular shape.

The cashew tree is a spontaneous species but can be cultivated and used for reforestation and for its fruit.

It begins to produce a fruit (cashew nuts) at the age of 5, though it can start much earlier (2 years old) if well tended. The average production is of 15 Kg per tree and per year.

The natives use the wood intensively: its light wood is used as fuel or to make packing cases, the ashes fertilise the soil, the tannins from the bark are used to tan animal skins and the fruit of course is used as a food. It is also used for its pharmacological virtues.

The cashew fruit has a very unusual appearance. What seems an apple-like fruit is in fact the fleshy peduncle which swells when the nut is ripe. The actual fruit is the nut, located at the bottom of the "apple" and looking like its appendage.

The nuts are also unusual in another way. They are kidney-shaped, 3-5 cm long and 2-3.5 cm wide depending on the variety (there is also a wide variety of colours for the "apples" ranging from yellow to red). Nuts are gathered when the "apples" are ripe and fall on the ground and are then dried during a few days.

This process is almost exclusively made in India for the world production.

A woman worker can obtain 7 Kg of kernels a day by crushing about 40 Kg of nuts.

Ayurveda, the Indian system of medicine originated 3,000 years ago, has accepted this rich nut as a potential remedy as well as a nutritive food.

The Ayurvedic way of looking at health and healing is very different from the Western medical concepts: it is based on some philosophical aspects (how the body is related to its natural environment, to the cosmos, to time...., what is its psychic role, what are its unconscious levels...).

Ayurveda compares the body to a field in perfect harmony with nature, which can produce good or bad things. No bad thing such as illness can come from an outside cause only: it is due to irregular living patterns and improper eating habits which destroy the natural balance of the body.

When correcting this wrong way of living, the organism can renew its metabolic activities, particularly with natural diet: herbs, nuts, berries, very little meat....

The Ayurveda school of medicine is actually a compendium of herbal knowledge. As for nut in general, they have always been popular with the people of the Indus valley: almonds were good

for eye problems, walnuts were brain tonics, and cashew, introduced in Ayurveda texts in the 16th century, was used as a stimulant, a rejuvenator and an appetiser.

### **Composition**

Cashew is a source of nutritional elements:

- The "apple" has a high content of vitamin C, and hence is a good antiscorvy medicine. It is also a diuretic.

- The nuts are very rich in:

vitamins: A, D, K, PP (which develops during the roasting process) and particularly E (about 2 g per Kg),

minerals: calcium, phosphorus, iron

proteins (containing amino-acids in right proportions),

essential fatty acids: in particular oleic and linoleic.

### **Pharmacological use**

Cashew nuts are reported to be active:

- in lowering the cholesterol level in the blood,
- in helping to cure diabetes, kidney disorders
- in relieving arthritis and rheumatism
- for skin diseases like eczema
- for the formation of cell membranes and conjunctive tissues (nuts are good for collagen dysfunctions).

External applications: cashew nut oil is used:

- as a carrier for liniments
- as an anaesthetic in leprosy and psoriasis
- for blisters, warts, corns and ulcers.

### **Cosmetic use**

Cashew nut is obtained by expression and has a delicate and pleasant hazelnut smell which does not persist when incorporated in formulations.

Its natural richness in vitamin E protects it against oxidation and gives the formulated products a free radical scavenging activity.

As all unsaturated vegetable oils, cashew nut oil can be used for:

- skin care products for tired or dry skins

- hand creams
- massage oils
- sun and after sun products (oils and milks)
- lip balms

10. B209. D.M.A. Jayaweera: Medicinal Plants used in Ceylon Part 1. National Science Council of Sri Lanka. Colombo 1981

*Semecarpus anacardium* Linn.

*Semecarpus latifolius* Pers.

*Anacardium latifolium* Lamk.

*Anacardium officinarum* Gaertn.

English: Marking-nut Tree

Sinhalese: Kiribadulla, Senkottan

Tamil: Erimugi, Kalagam, Kavaga, Pallam, Pallikkai, Pudanashanam, Se, Sengottai, Seran, Serangottai, Sinduram, Sombalam, Tagilima, Tembarai, Vingi, Virasagi

Hindi: Belatak, Bhela, Bheyla, Bhilawa, Bilaran

Sanskrit: Agnika, Agnimukhi, Anala, Antasatva, Arshohita, Arushkara, Avhala, Bhallataka, Bhalli, Bhallika, Bhutanashana, Bijapadapa, Dhanuvriksha, Krimighna, Kshatakshataru,, Mahatikshna, Nirdahana, Prithakabija, Rakktahara, Shailabija, Shophanuta, Shothahrita, Snehabija, Sphotabijaka, Sphotahetu, Tapanam, Vanhi, Vanhinama, Vatari, Virataru, Vranakrita.

**Distribution:** Occurs in the tropical Himalayan tract in India, Khasia hills, Chittagong, Central India extending down to Madras State. It is cultivated in Ceylon.

**Composition:** The sap of the bark contains the toxic principle cardol.

**Uses:** The brown gum which exudes from the bark is regarded as a valuable medicine for scrofulous, venereal and leprous affections. The oil extracted from the nuts acts as a vesicant in rheumatism and sprains but this needs careful handling. The seeds are used, after the toxicity has been removed by boiling in water, in the preparation of cures for piles, boils in the rectum, urinary diseases, nervous debility, skin diseases, sexual debility and diseases of the liver and spleen. In Goa, the nut is used as a vermifuge and for asthma.

Recent work on the fruits of this tree at the Cancer Research Institute in Bombay has given clinical relief to cancer patients, particularly to those unwilling to submit to surgery.

*Semecarpus coriacea* Thwaites

Sinhalese: Badulla

Sanskrit: Bhallataka

**Distribution:** Endemic to Ceylon and grows in the Central Province common in forests of the montane zone above 4,000 feet in altitude; Ramboda, Maturata, Nuwara Eliya and Kakgala.

**Uses:** The fruits are used as a substitute for the fruits of *Semecarpus anacardium* Linn.

*Semecarpus gardneri* Thwaites

Sinhalese: Badulla

**Distribution:** A common endemic tree found growing in moist low-country up to an altitude of about 3,000 feet; Hewessa, Sinharaja Forest, Morawak Korale, Ambagamuwa, Ratnapura and Kandy.

**Uses:** The fruits and seeds are used as substitutes for those of *Semecarpus anacardium* Linn.

*Semecarpus obovata* Moon

Sinhalese: Kalu-badulla

**Distribution:** a rare, endemic species growing in the moist low-country; Kalutara, Ratnapura, Galle, etc.

**Uses:** The fruits and seeds are used as substitutes for those of *Semecarpus anacardium* Linn.

*Semecarpus obscura* Thwaites

Sinhalese: Badulla

**Distribution:** A rather common endemic tree growing in the low-country, chiefly in the dry and intermediate regions of Ceylon; Batticaloa, Medamahanuwara, Maturata, Madugoda, Laggala, Uma Oya, Deltota.

**Uses:** The fruits and seeds are used as substitutes for those of *Semecarpus anacardium* Linn.

*Semecarpus subpeltata* Thwaites

Sinhalese: Maha-badulla

**Distribution:** A rare, endemic species found in forests of moist low-country between Ratnapura and Galle; Kuruwita Korale, Hiniduma Kanda, Singharaja Forest, etc.

**Uses:** The fruits and seeds are used as substitutes for those of *Semecarpus anacardium* Linn.

11. H. Dick: Tar Tree - *Semecarpus australiensis*. Australian Plants (1994) **17** (138) 241, 248-249.

*Semecarpus australiensis* (Anacardiaceae), a small-medium tree of coastal, lowland rainforests, is described. Although the succulent fruits (actually swollen stems) can be eaten by some people and Aborigines have rendered the nuts (the true fruits) edible by roasting them in sand, most parts of the plant can cause painful allergic reactions. As it can withstand long dry periods and salt spray, it is suitable for beach planting.

12. Banerjee S Rao AR: Promoting action of cashew nut shell oil in DMBA-initiated mouse skin tumour model system. *Cancer Lett* (1992 Feb 29) 62(2):149-52.

The commercially available oil derived from the shell of cashew nut (*Anacardium occidentale*) was tested for its potency in promoting the DMBA-initiated cells into papillomas in a murine two-stage skin tumorigenesis model system. Male Swiss albino mice (9-10-weeks-old) were assorted into different groups and treated topically with single sub-carcinogenic doses of DMBA (50 micrograms in 0.1 ml acetone) followed by application of 1% and 2% shell oil in acetone three times a week. Animals were sacrificed after 20 weeks from the commencement of the experiment. The results imply a weak tumour promoting effect of cashew nut shell oil as the mean tumour incidences were found to be 1.1 and 2.5 in 1% and 2% oil treatment groups, respectively, while the corresponding figure was 6.6 in the positive control group (DMBA and 1% croton oil in acetone). Few speculative mechanisms for the observed effect of cashew nut shell oil on initiated skin are discussed.

Institutional address:

Cancer Biology Laboratory  
School of Life Sciences  
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New Delhi  
India.

13. Chitnis MP Bhatia KG Phatak MK Kesava Rao KV: Anti-tumour activity of the extract of *Semecarpus anacardium* L. nuts in experimental tumor models. *Indian J Exp Biol* (1980 Jan) 18(1):6-8. [No Abstract Available]

14. Murty GK: Clinical toxicity study of *Semecarpus anacardium* Linn. f. *Indian J Exp Biol* (1974 Sep) 12(5):444-6. [No Abstract Available]

15. Gothoskar SV Chitnis MP Adwankar MK Ranadive KJ: Antitumour activity of SAN-AB: an extract of marking nut, *Semecarpus anacardium*. *Indian J Exp Biol* (1971 Jul) 9(3):399 [No Abstract Available]

16. Gothoskar SV Ranadive KJ: Anticancer screening of SAN-AB: an extract of marking nut, *Semecarpus anacardium*. *Indian J Exp Biol* (1971 Jul) 9(3):372-5. [No Abstract Available]

17. Vaishnav R Sankaranarayanan A Chaudhury RR Mathur VS Chakravarti RN: Toxicity studies on a proprietary preparation of *Semecarpus anacardium*. *Indian J Med Res* (1983 Jun) 77:902-8. [No Abstract Available]

18. Sivapragasm S West ME Ming MW: The possible relationship between cardiac glycogen levels, ouabain toxicity and the anti-arrhythmic effect of *anacardium occidentale*. *West Indian Med J* (1975 Sep) 24(3):150-9. [No Abstract Available]

19. CAJUEIRO

1996 The Raintree Group, Inc., Austin, Texas 78757, raintree@bga.com

Family: Anacardiaceae

Genus: Anacardium

Species: occidentale

Common Name: Cashew

Ethnic Names: Acajoiba, Acajou, A Pomme, Acajou, Acaju, Alcayoiba, Amerikan Elmasi, Anacarde, Anacardier, Anacardo, Cacajuil, Cajou, Caju, Cajueiro, Gajus, Jocote Maranon, Maranon, Merey, Noix D'Acajou, Pomme Acajou, Pomme Cajou, Pomme, Jambu golok, Jambu mete, Jambu monyet, Jambu terong, Jambu

Properties and Actions: Anti-inflammatory, Aphrodisiac, Tonic, Hypoglycemic, Astringent, Antidysenteric

Phytochemicals Include: 4-O-methylglucuronic-acid, Alanine, Alpha-catechin, Alpha-linolenic-acid, Aluminum, Anacardic-acid, Anacardol, Antimony, Arabinose, Arginine, Arsenic, Ascorbic-acid, Aspartic-acid, Barium, Benzaldehyde, Beta-carotene, Beta-carotene, Beta-sitosterol, Boron, Bromine, Cadmium, Calcium, Capric-acid, Caprylic-acid, Cardanol, Cardol, Cesium, Cystine, Europium, Fluorine, Folacin, Gadoleic-acid, Galactose, Gallic-acid, Gingkol, Glucose, Glucuronic-acid, Glutamic-acid, Glycine, Hafnium, Hexanal, Histidine, Hydroxybenzoic-acid, Isoleucine, Kaempferol-glycoside, L-epicatechin, Lauric-acid, Leucine, Leucocyanidin, Leucopelargonidine, Limonene, Linoleic-acid, Lysine, Magnesium, Manganese, Methionine, Mufa, Myristic-acid, Naringenin, Oleic-acid, Oxalic-acid, Palmitic-acid, Palmitoleic-acid, Phenylalanine, Phytosterols, Potassium, Proline, Protein, Pufa, Quercetin-glycoside, Salicylic-acid, Samarium, Scandium, Selenium, Serine, SFA, Silicon, Squalene, Stearic-acid, Strontium, Sulfur, Tannin, Threonine, Titanium, Tocopherol, Tryptophan, Tyrosine, Valine, Vanadium, Zinc

Country ETHNOBOTANY: WORLDWIDE USES

Africa: Intoxicant, Tattoo

Brazil: Wart, Corn, Callosity

Elsewhere: Asthma, Astringent, Cold, Corn, Congestion, Cough, Debility, Diabetes, Dysentery, Liqueur, Piscicide, Purgative, Scurvy, Tumor, Vesicant, Wart

Guatemala: Liqueur, Poison, Skin, Wart

Haiti: Caries, Toothache, Wart, Stomatitis, Diabetes Malaya Diarrhea, Thrush, Catarrh, Dermatitis, Nausea, Constipation

Mexico: Caustic, Diabetes, Diarrhea, Freckle, Leprosy, Liqueur, Poison, Skin, Swelling, Syphilis, Ulcer, Wart

Panama: Asthma, Cold, Congestion, Diabetes, Diarrhea, Hypertension, Inflammation

Trinidad: Ache(Stomach), Asthma, Cough, Diarrhea, Dysentery, Dyspepsia

Turkey: Diarrhea, Fever, Poison, Wart

Venezuela: Dysentery, Gargle, Leprosy, Sore(Throat)

## REFERENCED QUOTES ON CAJUEIRO

1. "Cajueiro is said to be good for bronchitis and cough. It is a good throat rinse when there is inflammation of the tonsils. It is used for its aphrodisiac properties and as a general tonic, increasing vitality. The leaves are indicated in cases of intestinal colic and the treatment of diarrhea. The roots are said to purge the system. Some sources comment on its ability to reduce glucose in the urine of diabetics."

2. "CASHEW PLANT *Anacardium occidentale*: Cashew plant has been used in combinations which help diabetes and support the pancreas. It can also help the body to assimilate and retain electrolytes and minerals."

3. "*Anacardium Occidentale* L. Anacardiaceae. "Cacho", "Cashu", "Maranon", "Cashew". Cultivated. Roasted seeds are edible, but oil from the fruit (cardol) is a strong vesicant. The swollen peduncles of the fruit are edible fresh, in drinks or ices. Juice from green fruits used to treat hemoptysis. The leaf infusion is used to treat diarrhea. Oil used for warts; good for teeth. Wine obtained from fruit is a good antidysenteric. Seeds used as worm medicine to kill bot-fly larvae (MJP). A gum like gum-arabic is extracted from sap; fruit juice used as a permanent marker for clothing (SOU). Bark decoction used to treat diarrhea (RVM). Important products are: the cashew nuts, and the cashew nut shell liquid, also called cardol. Containing phenol it is an important raw material for the plastic and resin industry (RVM). From the tender shoots they make expectorants (RVM). Fruit juice used for warts. The "Wayapi" use the bark as a remedy for infants (GMJ). "Tikunas" use the "apple" juice for flu. (Fruit juice contains three antitumor compounds JAF 41:1012. 1993.) Bark decoction, taken each month during the menses, is said to be contraceptive (SAR). Brazilians use it as a douche for vaginal secretions (BDS), or as an astringent to stop bleeding after tooth extraction."

4. "Three herbs from the Amazon act as aphrodisiacs and have traditionally been used for impotence: Marapuama, Catuaba and Cajueiro. Cajueiro has aphrodisiac properties and is a general tonic for the body. Tonics increase vitality by strengthening and rejuvenating either a specific organ, a system, or the whole body. The value of tonic herbs lies in their normalizing and nurturing effect on the body."

5. "*Anacardium occidentale*."

PFS0: Primary food source: fruit/seed edible

SFS04: Secondary food source: used for ceremonial beverage

Traditionally cultivated treelet of dooryard garden and old swidden"

## 6. ANACARDIACEAE

Cashew Family, Sumac Family

This is a family of 60 genera and nearly 600 species of trees or shrubs, rarely climbers, usually with resinous bark. They are distributed primarily in the tropics of both hemispheres, but some species range into the temperate zones. It is the family of the mango, cashew nut, poison ivy

and other economically important plants.

The family is best known for its phenols and phenolic acids causing serious skin irritation - anacardol, anacardic acid and relatives. Terpenes, triterpenes, polyphenols and tannins are also common. Anacardic acid has been reported to have anthelmintic activity (Chattopadhyaya, 1969). A review of the toxins has been published (Baer, 1977).

### Anacardium

The 15 species of *Anacardium* are found in the New World tropics; they are small to very tall trees. The centre of speciation is Brazil. The most noteworthy economic species is the cashew nut, *A. occidentale*: the fruit and swollen receptacle are both edible-the fruit yields the cashew nut, the peduncle is fleshy, yellow or red, and is pleasantly acidic. The bark is resinous in some species and has a gum resembling gum arabic and is valuable for making varnish.

*Anacardium occidentale* Linnaeus, Sp. Pl. (1753) 383. co-a (Tikuna); maranon (Col.) G 61; S 3920, 8176; SRS 24037

The juice squeezed from the peduncle is considered medicinal against influenza by the Tikunas. A tea of leaves and bark is ingested in treating diarrhea. Taken each month during menstruation, a bark decoction is held to be contraceptive. The chemical principles responsible for the irritating properties of the oil of cashew shell are primarily cardol and anacardic acid. The fresh leaves of SRS 24037 are alkaloid-positive.

### REFERENCES

Baer, H. Toxic Plants (Symp.) (1977) 161, (Publ 1979).

Chattopadhyaya, M.K. and R.L. Khare, Ind. J. Pharm. 31 (1969) 104."

20. Maria Jose Nogueira Diogenes et al. Contact dermatitis among cashew nut workers. Contact Dermatitis 1996: **35**: 114

The cashew tree (*Anacardium occidentale*), native to northeastern Brazil, is cultivated mainly in India and Brazil. Anacardic acid and cardol, the main cashew nut shell liquid (CNSL) components are responsible for contact dermatitis, acting as both irritants and sensitizers, and are the main cause of occupational contact dermatitis in cashew nut workers. The irritant potential of CNSL is well reported, but its sensitizing potential not demonstrated in studies where CNSL is used for patch testing, probably because cardol, the main sensitizer, is present at such low concentrations. The sensitizing potential of cardol was established when compared with cardanol and anacardic acid at 1% and 2%.

The main dermatological lesions were erythema, oedema, vesiculation, desquamation and lichenification. Workers who did not touch the nut shells did not have skin problems. 1 of 2 women who worked with natural nut oil, without previous heating, showed sensitization to cardol at 1% and 2%. Of 19 subjects working with heated cashew nuts, 4 were positive to nickel sulphate, 2 to thimerosal, 1 to bromochlorophene, and 1 to quaternium-15.

21. In a data sheet from Guinness products we read of *Anacardium occidentale* Linne. Extracted from the pulpy, pseudo-fruit of the cashew nut tree. It contains calcium, phosphorus, iron and

vitamin C. Its mineral salts give the fruits its remineralising properties. Its conditioning activity comes from its proteins and mucilage. The vitamin C content works to reduce UV radiation damage to hair and skin and overall is excellent in the prevention of premature skin aging. Include in creams and lotions for face and body or as a scalp conditioner in hair products. Use 2-5% in hair care, 5-10% in creams and lotions.

22. Zakaria (B273) refers to *Anacardium occidentale* Linn. (Anacardiaceae) by the local names *Gajus*, *Jambu golok*, *Ketereh*.

Part used: Bark and leaves

Traditional use: For treating diarrhoea, diabetes and mouth ulcers, drink water in which the leaves and bark have been boiled. Water in which the leaves and bark have been boiled is also used for relieving tooth ache and for washing the eyes.

Scientific study: Studies have shown that the boiled water helps to lower sugar levels in the blood of diabetic mice. Dosages of 25 mg/kg produces hypoglycaemic (lack of sugar in the blood) in dogs. Other identified compounds are ethylgallate, leucodelphinidin and leucocyanidin.

## 23. IN VITRO STUDIES ON ANTIMUTAGENECITY OF WATER, ALCOHOLIC AND OIL EXTRACTS OF SEMECARPUS ANACARDIUM

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### SUMMARY

Objects: To test the antimutagenicity of water, alcoholic and oil extracts of *Semecarpus anacardium*.

Methods: Water, alcoholic and oil extracts were prepared and tested in the bacterial test system using *Salmonella typhimurium* strains TA98 and TA100 in the presence and absence of metabolic activities. The antimutagenicity was tested versus Benzo(a)pyrene (BzP) in dose dependent manner. Alcoholic and water extracts were also tested in human lymphocyte in vitro for its antimutagenic activity versus BzP at concentration of 1000mcg per tube.

Results: The water, alcoholic and oil extracts of *Semecarpus anacardium* were antimutagenic versus BzP in a dose dependent manner. The water and alcoholic extracts were antimutagenic versus BzP induced micronuclei at concentrations of 1000mcg per tube in human lymphocytes.

Conclusion: Water, alcoholic and oil extracts of *S. anacardium* are antimutagenic against BzP induced mutagenicity.

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