



## *Anacardium occidentale* (Linn): A Brief Review

**Doniya Kunjumon\*, Ashoka Shenoy M**

Department of Pharmacology, Srinivas College of Pharmacy, Valachil, Mangalore, Karnataka, India, 574143.

\*Corresponding author's E-mail: [doniyakunjumon@gmail.com](mailto:doniyakunjumon@gmail.com)

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### ABSTRACT

*Anacardium occidentale* L. is a Brazilian tree with phenolic lipids in abundance. The cashew tree (*Anacardium occidentale*) can reach a height of 15 m and has a strong, twisted trunk and woody branches. It is found in tropical nations such as Nigeria, Kenya, Tanzania, and Mozambique, and belongs to the Anacardiaceae family. In English, *Anacardium occidentale* is known as cashew. The cashew tree yields a variety of items. *A. occidentale*'s bark, leaves, and shell oil offers therapeutic properties. Antioxidant, antigenotoxic, antimutagenic, antiulcerogenic, anti-inflammatory, antibacterial, antifungal, and larvicides properties are all present in this species. Anthocyanins, carotenoids, ascorbic acid (vitamin C), flavonoids, and other polyphenols, as well as mineral components, are abundant in this tree. In folk medicine, the bark and leaves are employed. The main role of this review is to accumulate and organize articles on *Anacardium occidentale* and its proven pharmacological action and mechanism of action.

**Keywords:** *Anacardium occidentale*, chemical constituents, medicinal uses.

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### INTRODUCTION

Natural plants have been employed for a variety of reasons throughout human history. They've been around for a long time and are still employed in scientific studies today. *Anacardium occidentale* L., the cashew tree, is a member of the Anacardiaceae plant family, which also contains the mango, pistachio, and poison ivy. There are 76 genera in the Anacardiaceae family, grouped into five tribes (Anacardiaceae, Dobineae, Rhoaeae, Semecarpeae, and Spondiadeae), with over 600 species<sup>1</sup>. The cashew tree (*Anacardium occidentale*) is a Brazilian and Lower Amazonian native. The Cashew tree can resist a variety of conditions, including drought and poor soil, but not cold frost. The cashew nut is an extremely valuable eating nut. It produces two "Oils," one of which is termed Cashew Nut Shell Liquid and is found between the seed coat (or pericarp) and the nuts (CNSL)<sup>2</sup>.

Cashew nuts, like peanuts and pistachio nuts, are popular appetizers. They're also employed in the food sector and as a component in a variety of confectionary items. Humans benefit from the nutritional value of cashew nut kernels. They're high in vitamins (A, D, and E), as well as lipids and proteins. Furthermore, they contain significant levels of minerals such as calcium, iron, zinc, copper, potassium, phosphorus, magnesium, and sodium, all of which are measured in dry weight<sup>3</sup>.

*A. occidentale* is a versatile tree whose leaves, stems, and bark extracts have long been used to treat diarrhoea, dysentery, and colonic pain. It has anti-diabetic, anti-inflammatory, antibacterial, and analgesic qualities, according to reports<sup>4,5</sup>.

### Vernacular Names<sup>6</sup>

Hindi: Kajubadam, Khajoor

Kannada: Godambi Mara, Godambee, Godamber, Godami

Malayalam: Kappalmavu, Kashumavu, Kasumavu, Paringimavu

Marathi: Kajucha, Kajoo, Kaajoocha

Punjabi: Kaju

**Synonym:** *Acajuba occidentalis* (L.) Gaertner, *Anacardium amilcarianum* Machado, *Anacardium microcarpum* Ducke<sup>6</sup>

**Common/English Names:** Cashew, Cashew nut, Kidney-nut<sup>6</sup>

### Taxonomical position

**Table 1:** Taxonomical classification of *Anacardium occidentale*

Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Sapindales
Family	Anacardiaceae
Genus	<i>Anacardium</i> L.
Species	<i>Anacardium occidentale</i> L.



## CHEMICAL CONSTITUENTS

*A. occidentale* has a wide range of secondary metabolites, according to phytochemical research. Phytochemical substances such as triterpenoids, phenolics, and volatile oils can be found in the ethanolic extract of *A. occidentale* L. nuts. Phenolics, volatile oils, xanthoprotein, and carbohydrates were all present in ethylacetate extract. Triterpenoids, phenolics, volatile oils, flavonoids, xanthoprotein, and carbohydrates were all found in acetone extract<sup>7,8</sup>. Anthocyanins, carotenoids, ascorbic acid (vitamin C), flavonoids, and other polyphenols, as well as mineral components, are abundant in this tree. In folk medicine, the bark and leaves are employed<sup>9</sup>.

Ferulic acid, caffeic acid, sinapic acid, gallic acid, and ellagic myritine are all present in the yellow and red fruits of *A. occidentale*<sup>10</sup>. In the oils, 84 volatile components have been discovered. The terpenes were the most prominent compounds in the essential oils of the red cashew variety's leaves and flowers, indicating that they were the most significant compounds in the essential oils of the red cashew variety's leaves and flowers. The primary ingredients of the red cashew leaf oil were the (E)-b-ocimene (28.8%), a-copaene (13.6%), and d-cadinene (9.1%) among the 30 terpenes discovered. The primary constituents of the red variety's flower oil were b-caryophyllene (26.0%), methyl salicylate (12.8%), and benzyl tiglate (11.3%). The oils of both types of fruits, on the other hand, had a chemical composition that was considerably distinct from that of leaves and flowers<sup>11</sup>.

## DISTRIBUTION

*A. occidentale* grows to a height of 5-10 m, but can grow to 20 m on clay terrain. It has a 25-40 cm diameter twisted trunk. When young, the leaves are oval, obovate, leathery, glabrous, and reddish<sup>12</sup>. The cashew tree is found in low latitude regions near the equator, between the parallels 15°N and 15°S, in coastal areas, primarily in tropical South America, Africa, and Asia, between latitudes 27°N in Southern Florida and 28°S in South Africa; and also in low latitude regions near the equator, between the parallels 15°N and 15°S, in coastal areas, primarily in tropical South America, Africa, and Asia<sup>13</sup>. The Anacardiaceae family includes over 70 genera with over 600 species found in tropical, subtropical, and temperate climates around the world<sup>14</sup>. The family contains a large number of significant secondary metabolites with a wide range of biological functions<sup>15</sup>.

## ACTION AND USES OF CASHEW NUTS

### Antioxidants

Cashew nut consumption also aids in the utilization of iron, the elimination of free radicals, the development of bone and connective tissue, and the production of the skin and hair pigment melanin, thanks to its high copper concentration. Copper, a component of the enzyme superoxide dismutase, is important for energy production and antioxidant defence, allowing blood vessels, bones,

and joints to move more freely. The cashew nut is one of the most affordable significant sources of non isoprenoid phenolic lipids, which have a wide range of biological features and therapeutic applications, as well as possible antioxidant activity<sup>16</sup>.

Flavonoids such as (+)-catechin, (-)-epicatechin, and epigallocatechin were also discovered, and their concentrations increased as the temperature rose. The findings imply that roasting cashew nuts and testa for a short period (HTST) effectively increases antioxidant activity. Various bioactive substances such as phenolics, flavonoids, phospholipids, sphingolipids, sterols, and tocopherols have recently been found to have antioxidant properties in cashew nut samples<sup>17,18</sup>.

### Antihypertensive Activity

Tannins in the cashew apple (hypocarp) were discovered to have anti-hypertensive effect, supporting the usage of the plant in traditional medicine in the south of Cameroon and other African countries for the treatment of diabetes mellitus, diarrhoea, and hypertension<sup>19</sup>.

### Antiophidian Activity

In a dose-dependent manner, *Anacardium occidentale* bark extract was discovered to neutralise *Vipera russelii* venom hydrolytic enzymes such as phospholipase, protease, and hyaluronidase<sup>20</sup>. These enzymes are responsible for envenomation's local consequences, such as tissue destruction, inflammation, and myonecrosis, as well as systemic effects, such as coagulation component changes. Furthermore, the extract counteracted the pharmacological effects of snake venom, such as edoema, bleeding, and myotoxic consequences, including lethality. Because the bark extract inhibited both hydrolytic enzymes and pharmacological effects, the researchers concluded that it may be employed as an alternative to serum therapy and as a rich source of prospective hydrolytic enzyme inhibitors involved in a variety of physiopathological illnesses<sup>21</sup>.

### Larvicidal Activity

Anacardic acids extracted from *Anacardium occidentale* and sodium salts of cashew nut shell extracts (CNSL) both showed substantial anti-vectorial activity against *Aedes aegypti* larvae<sup>22</sup>. In laboratory and field circumstances in Andhra Pradesh, *Aedes aegypti* larvae and pupae were found to be very susceptible to 12 ppm CNSL, while *Anopheles subpictus* larvae and pupae were shown to be highly susceptible to 38 ppm Cardanol/CNSL solution<sup>23</sup>.

### Cardiovascular and Circulatory Health

The Linoleic acid (Omega-3)-rich cashew nut is the least harmful to the heart and arteries. In fact, it accounts for about half of the nut's total weight. Cashews have the correct fat balance, with a 1:2:1 saturated to monounsaturated and polyunsaturated fat ratio that is ideal for human consumption. The relative abundance of monounsaturated fatty acids in cashew nut is beneficial to



one's health, while the relative abundance of fat in cashew nut poses no nutritional danger. Cashew nuts are a healthy fat snack for heart patients since they contain no cholesterol, which is unusual for such a pleasant and gratifying pleasure. They also aid in the maintenance of good health due to their high quantities of monounsaturated fatty acids<sup>24</sup>.

The high magnesium concentration of the cashew nut is also responsible for its heart-healthy properties. Cashews provide 82.5 milligrammes of magnesium per ounce in their raw form, which is 21% of the daily required requirement for the heart-healthy mineral, which also helps to prevent high blood pressure, muscular spasms, migraine headaches, tension, soreness, and exhaustion. Magnesium also works with calcium to promote the human body's healthy muscles and bones<sup>24</sup>.

### Antileishmanial Activity

In vitro, a hydroalcoholic extract of *A. occidentale* bark demonstrated high efficacy against Leishmania (Viannia) braziliensis promastigotes<sup>25</sup>.

### Antiviral Activity

Only simian rotavirus was active against extracts from *Anacardium occidentale* leaves (4 mg/ml) and Psidium guajava leaves (8 mg/ml) (82.2 percent and 93.8 percent inhibition, respectively). Rotaviruses are the most common cause of diarrhoea in newborns and young children in both industrialised and poor countries. Diarrhoea is one of the leading causes of death in Brazil, especially among children<sup>26</sup>.

### Nutrition

The cashew nut, a popular snack found on supermarket and health food store shelves around the world, is high in nutrients. It has a high concentration of the vital elements iron, magnesium, phosphorus, zinc, copper, and manganese, which are used in holistic health solutions and healthy diets<sup>27</sup>.

### CONCLUSION

*Anacardium occidentale* L. has a variety of medicinal and pharmacologically active substances. The bark, leaves, and shell oil of *A. occidentale* have therapeutic importance. Antioxidant, antigenotoxic, antimutagenic, antiulcerogenic, anti-inflammatory, antibacterial, antifungal, and larvicides are among the features it possesses. Anthocyanins, carotenoids, ascorbic acid (vitamin C), flavonoids, and other polyphenols, as well as mineral components, are all found in the plant. Apart from that, significant research on this plant has revealed that it has a wide range of pharmacological actions.

### REFERENCES

1. A de Sousa Leite, Islam MT, Júnior AL, e Sousa JM, de Alencar MV, Paz MF, Rolim HM, de Medeiros MD, de Carvalho Melo-Cavalcante AA, Lopes JA. Pharmacological properties of cashew (*Anacardium occidentale*). African Journal of Biotechnology. 2016 Sep 23;15(35):1855-63.
2. Akinhanmi TF, Atasié VN, Akintokun PO. Chemical composition and physicochemical properties of cashew nut (*Anacardium occidentale*) oil and cashew nut shell liquid. Journal of Agricultural, Food and Environmental Sciences. 2008; 2(1):1-0.
3. Kapinga FA, Kasuga LJ, Kafiriti EM. Growth and Production of Cashew Nut. Soils, Plant Growth and Crop Production. 2017.
4. Arekemase, M.O., Oyeyiola, G. P. and Aliyu, M. B. Antibacterial Activity of *Anacardium Occidentale* on Some Enterotoxin Producing Bacteria. International Journal of Biology. 2011; 3:41-45.
5. Olatunji, L. A., Okwusidi, J. I., and Soladoye, A.O. Antidiabetic Effect of *Anacardium occidentale* Stem-Bark in Fructose-Diabetic Rats. Pharmaceutical Biology. 2005; 43(7): 589–593.
6. Fadeyi OE, Olatunji GA, Ogundele VA. Isolation and characterization of the chemical constituents of *Anacardium occidentale* cracked bark. Nat. Prod. Chem. Res. 2015 Sep 30;3(5):1-8.
7. Rajesh, K. V.S., Sumathi, C.S., Balasubramanian, VandRamesh, N.Elementary chemical Profiling and antifungal properties of cashew (*Anacardium occidentale* L.) nuts. Botany Research International, 2009;2(4): 253 – 257.
8. Terdong, L.T., Dimo, P.D.D., Dzeufiet, A.E., Asongalem, D.S., Sokeng, P., Callard, J.F. An anti-hyperglycemic and renal protective activity of *Anacardium occidentale* (Anacardiaceae) leaves in streptozotocin. Taxusbakata. Pharmaceutical biology, 2006;39:236-238.
9. Konan NA, Bacchi EM. Antiulcerogenic effect and acute toxicity of a hydroethanolic extract from the cashew (*Anacardium occidentale* L.) leaves. J. Ethnopharmacol. 2007;112:237-242.
10. Moo-Huchin VM, Moo-Huchin MI, Estrada-Leon RJ, Cuevas-Glory L, Estrada-Mota IA, Ortiz-Vazquez E, Betancur-Ancona D, Sauri-Duch E. Antioxidant compounds, antioxidant activity and phenolic content in peel from three tropical fruits from Yucatan, Mexico. Food Chem. 2015;166:17-22.
11. Maia JG, Andrade EH, Maria das Gracias BZ. Volatile constituents of the leaves, fruits and flowers of cashew (*Anacardium occidentale* L.). Journal of food composition and analysis. 2000 Jun 1; 13(3):227-32.
12. Lorenzi H. Arvores brasileiras: manual de identificacao e cultivo de plantas arbóreas nativas do Brasil. 5 ed. Sao Paulo: Instituto Plantarum de Estudos da Flora 2008.
13. Gomes J. Os frutos sociais do caju. Fundacao Banco do Brasil. Coordenacao e Organizacao Fundacao Interuniversitaria de Pesquisa e Estudos sobre trabalho 2010.
14. Engels C, Grater D, Esquivel P, Jimenez VM, Ganzle MG, Schieber A. Characterization of phenolic compounds in jocote (*Spondias purpurea* L.) peels by ultra high-



- performance liquid chromatography/electrospray ionization mass spectrometry. *Food Res. Int.* 2012;46:557-562.
15. Abu-Reidah IM, Ali-Shtayeh MS, Jamous RM, Arraez-Roman D, Segura-Carretero A. HPLC-DAD-ESI-MS/MS screening of bioactive components from *Rhus coriaria* L. (Sumac) fruits. *Food Chem.* 2015;166:179-191.
  16. Tyman JHP, Tychopoulos V, Chan P. Quantitative analysis of natural cashew nutshell liquid (*Anacardium occidentale*) by high-performance liquid chromatography. *J. Chromatogr* 1984;303:137–150.
  17. Miraliakbari H, Shahidi F. Antioxidant activity of minor components of tree nut oils. *Food Chem* 2008;111:421–427.
  18. Sajilata MG, Singhal R.S. Effect of irradiation and storage on the antioxidative activity of cashew nuts. *Radiat. Phys. Chem* 2006; 75:297–300.
  19. Paris R, Plat M, Giono-Barber P, Linhard J, Laurens A, Chemical and pharmacological study of leaves of *Anacardium occidentale* L. (Anacardiaceae). *Bull Soc Med Afr Noire Lang Fr*, 1977b;22(3):275–281.
  20. Ushanandini S, Nagaraju S, Nayaka SC, Kumar KH, Kemparaju K, Girish KS, The anti-ophidian properties of *Anacardium occidentale* bark extract. *Immunopharmacol Immunotoxicol*, 2009;31(4):607–615.
  21. Lim TK. *Anacardium occidentale*. In *Edible medicinal and non-medicinal plants* 2012;45-68.
  22. Laurens A, Fourneau C, Hocquemiller R, Cavé A, Bories C, Loiseau PM, Antivectorial activities of cashew nut shell extracts from *Anacardium occidentale* L. *Phytother Res*, 1997;11(2):145–146.
  23. Mukhopadhyay AK, Hati AK, Tamizharasu W, Babu PS. Larvicidal properties of cashew nut shell liquid (*Anacardium occidentale* L) on immature stages of two mosquito species. *J Vector Borne Dis* 2010;47(4):257–260.
  24. Akinhanmi TF, Atasie VN. Chemical Composition and Physicochemical Properties of Cashew nut (*Anacardium occidentale*) Oil and Cashew nut Shell Liquid. *J. Agric. Food, and environmental Sci* 2008; 2(1); 173-79.
  25. Franca F, Cuba CA, Moreira EA, Miguel O, Almeida M, Das Virgens M, Marsden PD. An evaluation of the effect of a bark extract from the cashew (*Anacardium occidentale* L.) on infection by *Leishmania (Viannia) braziliensis*. *Rev Soc Bras Med Trop* 1993;26(3):151–155.
  26. Gonçalves JL, Lopes RC, Oliveira DB, Costa SS, Miranda MM, Romanos MT, Santos NS, Wigg MD. In vitro anti-rotavirus activity of some medicinal plants used in Brazil against diarrhea. *J Ethnopharmacol*, 2005;99(3):403–407.
  27. Fetuga B, Babatude G, Oyenuga V. Composition and nutritive value of cashew nut to the rat. *J. Agric. Food Chem* 1974; 22:678–682.

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