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Ethnobotany and phytochemistry of *Corallocarpus epigaeus* CL-A candidate of potentials medicinal plant

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Abstract

Medicinal plants have played important role in the curing of the disease of human culture in day to day life. All traditional culture mostly used the medicinal plants as a source of cure of disease. Efficacy of medicinal plants and herbal formulation products has now become a key role of the developing country. The focus of this research paper is to analysis published literature on the ethnobotany and phytochemistry of *Corallocarpus epigaeus*. The major scientific literature finds out from Science direct, Google Scholar and Research gate were queried for information on *C. epigaeus* using various keyword combinations. Rhizome of *C. epigaeus* (Cucurbitaceae) is especially useful in old snakebite, applied to bitten part, asthma, syphilitic, fever and diabetes control. Root powder present the fats and fatty acids, mucilage, proteins, carbohydrates, Vitamin C, E, amino acids, flavonoids, alkaloids, glycosides, terpenoids, tannins and phenol. 6.3% monoterpenes and 88.9% sesquiterpenes were present the volatiles compound present in the roots. The major constituents were β -selinene isshwarane, α -selinene and isshwarone. The phenolic content, tannin, carbohydrate, vitamin C and vitamin E present in the roots. This review study the ethnobotanical information and phytochemical constitute of *C. epigaeus*. This scientific literature will useful to understanding the scientific knowledge update to this plant and further planning for fill the gap of the research for betterment for human life.

Keywords: *Corallocarpus epigaeus*, ethnobotany, phytochemistry, medicinal plant

Introduction

Ancient time, the knowledge of the medicinal herbal use of the plants information from ancient to modern age orally but no proper documentation of the medicinal plants formulations has been maintained in scientific literature. It is urgent need to study the literature of medicinal plant scientifically report need to documents should be made to know their medicinally useful. (Mangathayaru, 2013) [3]. Medicinal plants extract from different herbs and their different biological activity related scientific research has been carried out through the world. So, developing countries lot of demand of medicinal plants-based medicine because of wide range of their biological activity, compare to synthetic drug natural medicine no side effect with higher safety. Present scenario medicinal plants product and their compound derivatives represent among 50% in all drug in clinical purpose with higher plant derived formulation representing 25% of total (Mangathayaru, 2013) [3]. Higher plants have been reported research for potentially useful biological activity around only 15%.

Medicinal plant material is natural source of depends on the still run pharmaceutical industries. Many studies reported and confirm the ethnobotanical uses by analyzing the phytonutrients, chemical constituents, biological activity and pharmacological activities etc. This review focus on the ethnobotany values and phytochemistry of *Corallocarpus epigaeus* (Cucurbitaceae) for proper understanding for filling the gap for research.

Corallocarpus epigaeus is a traditional medicinal plant, monoecious, tuberous, climbing plant under the family Cucurbitaceae found in tropical and temperate regions of India. The plant is traditionally known as 'Jungali Suran' and 'Ghee no Ghado' in Gujarati, 'Akasgaddah' in Hindi, and 'Akashagarudan' in Tamil (Kirtikar and Basu, 1934) [2]. Distributed in India, Rajasthan, Gujarat (Jamnagar, Porbandar, Gir-Somnath, Bhavnagar, Amreli), M.P., Andhra Pradesh, Tamil Nadu, Maharashtra, Karnataka. Monoecious climber plant with tuberous root. Stem angular and tendrils simple, elongated and smooth. Leaves 3 lobed, cordate, hairy present on adaxial and abaxial surfaces and lobes obovate. Petiole length up to 30mm long, globous to shortly hair present.

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Male plant with the peduncle, maximum 15 flowered and long up to 5mm pedicels size. Calyx lobes lanceolate with 1mm long. Greenish yellow corolla, obtuse with long 1mm. Female flowers present on axillary branch, often solitary, 1-5mm long pedicel, thickened in fruit; Campanulate type calyx-tube, 2 mm long; 1.5-2.5mm long p and 1-1.5mm broad petals, reflexed. Fruit shape ellipsoid, glabrous and beaked. Flowers and fruiting on June to October. Seed size of 5mm long and 3 mm wide, shape is obovate, with blunt base and colour is compressed cream-light yellow unshiny (Rubina Abid *et al.*, 2015) [4]. The characters of seed epidermis have three aerenchymatus layers (Singh and Dathan, 1974) [5].

Kirtikar and Basu (1935) [1] reported from Mysore and Deccan area the root has a use as a curing for snakebite, it's applied to bitten part administered internally (Kirtikar and Basu, 1934) [2]. In Andhra Pradesh, Yanadi tribes in this area are involvement in catching snakes and curing snake bites. Antidote given depends on the condition of patient follow the method of administration reported by Sudarsanam and Siva Prasad, (1995) [6]. Sudarsanam and Siva Prasad (1995) [6] was reported the anti-poisonous plant drug prepared from dried tuber (50g) mixed with turmeric powder (10g) in 5:1 ratio. Used specifically for NAJA NAJA bite at 1 teaspoonful plant drug twice daily until recovery. The main chemical component present is sesquiterpene lactone, a bitter principle bryonin in tuber use for treating snake bite, body heat and psoriasis (Kirtikar and Basu, 1996). Reddy *et al.* (2006) [7] was reported during Ethno-pharmacological survey of the Eastern Ghats region of Andhra Pradesh plants are used in treatment of respiratory disorders by tribal people (Reddy *et al.* 2006) [7]. Reddy *et al.* (2006) [7] was reported the take a teaspoon of tuber paste is applied once daily for 45 days used for asthma and teaspoon of tuber paste from this species is taken once daily until cured used for Bronchitis. In tribal area of Rajasthan people are used tuber in typhoid fever and stomach disorders (Swarnkar and Katewa, 2008) [8]. Swarnkar and Katewa (2008) [8] reported the fruit of *Citrus medica* (5gm) with 5-6 pieces of *C. epigaeus* tuber is chewed in case of tumor in stomach. In typhoid, the decoction of tuber is given to patient for seven days. The extracted juice of the entire vine for curing eczema use in Mysore district of Karnataka traditional healers from the rural areas. The affected surface area of skin applied for 3 to 4 days (Chandra *et al.*, 2014) [32]. The tubers boiled with coconut oil are applied once a day for six months on the affected parts to cure leprosy are used in Malayali tribes of Kolli hills in Namakkal district of Tamil Nadu (Bhuvaneswari *et al.*, 2015; Poonam, 2017) [9, 29].

To kill and remove the tape worms, sheep and goats are fed the juice from Chattak (about 50 grams) of fresh small tuber pieces mixed with a cup of water twice a day for four days (Salave *et al.*, 2012) [10]. "Kollan kova killangu" refers to the *C. epigaeus* found in the Alagarkoil Hills (Reserved Forest) in Tamil Nadu state. To eliminate the poison from a dangerous bite, a paste made from the tubers is applied (Ganesan *et al.*, 2007) [24]. *C. epigaeus* tubers are traditionally utilized in North Karnataka for snake bites and warts, which are Sanskrit words for ill signs (Mulimani and Chavan, 2007) [25]. To cure dysmenorrhea, the corm of *C. epigaeus* is crushed and converted into little pills, which are administered twice daily, three times a month (Shivakumar and Parashurama, 2012) [27]. Root is used to treatment for later stages of dysentery and syphilitic rheumatism. Regarding acute dysentery, it seems to have little impact. It is applied externally to treat chronic rheumatism after being prepared into a liniment (Sivkumar *et al.*, 2009) [26]. According to Murthy *et al.* (2013) [28], the root

is an effective treatment for dysentery and rheumatism. Another treatment for snakebite is root paste. The tuber is used to treat many kinds of diseases, including a cold, tumor, obesity, and cough (Sundaram *et al.*, 2019) [30].

The medicinal properties of the drugs usually responsible of secondary metabolites (Umadevi and Kamalam, 2012) [11]. *C. epigaeus* is a rich source of phytochemicals with antioxidant activities, anti-inflammatory and analgesic effect (Uthrapathy *et al.*, 2011; Nalini and Dhanaraj, 2015) [12, 13]. Nalini and Dhanaraj (2015) [13] reported the Na and Fe, vitamin A and D and Phlobatannins are absent in *C. epigaeus* tuber. Negueruela *et al.*, (1997) was reported from root oil present the Sesquiterpenes. Methanolic extract of root powder present the protein, carbohydrates, amino acid flavonoids, alkaloids and mucilage (Nisha Shri *et al.*, 2010; Jayaseelan *et al.*, 2016; Nalini and Dhanaraj, 2015) [15, 16]. Ethanolic extract of root part present the chemical constituents present the Vitamin C and E (Rajamanickam *et al.*, 2011; Nalini and Dhanaraj *et al.*, 2015) [13]. Acetone and water extracts root present the fat, fatty acids, alkaloids, flavonoids, glycosides, phenol, terpenoid and tannins (Umadevi and Kamalam, 2012; Nalini and Dhanaraj, 2015) [11, 13]. Root of Methanolic extract present the arsenic, lead, mercury, cadmium and heavy metals (Karthic *et al.*, 2018; Nalini and Dhanaraj *et al.*, 2015) [18, 13]. Nalini and Dhanaraj (2015) [13] was reported the alcoholic extract of roots present the Ca, Mg, K, Cu, Sulphate, Phosphate, Chloride, Nitrate and Carbonate. 6.3% were found to be monoterpenes and 88.9% were sesquiterpenes present in the root volatiles compound reported by Negueruela *et al.* (1997). The main constituents were present the ishwane, ishwane, α -selinene and β -selinene present 21.6%, 15.4%, 14.8%, and 11.5% respectively. Ethyl acetate extract of root and rhizome present the alkaloids, proteins and amino acid and chloroform extract of root and rhizome present the alkaloids and Flavonoids (Nisha Shri *et al.*, 2010) [15]. Uthrapathy *et al.*, (2011) [12] study the *C. epigaeus* root present the phenolic content, tannin and carbohydrate, vitamin C and vitamin E present 2.67 ± 0.54 (mg/100 g), 1.47 ± 0.36 (mg/100 g), 6.2 ± 0.65 (g/100 g), 2.96 ± 1.46 (mg/100 g) and 1.31 ± 0.32 (mg/100 g) respectively. Umadevi and Kamalam (2012) [11] was reported the HPTLC studies on leaf, stem and tuber powder extracts of *C. epigaeus* confirmed the presence of 5 types of glycosides, 3 types of flavonoids and 1 type of phenolic compound. Bhavani *et al.* (2013) [19] was study the methanolic and chloroform extract of tuber of *C. epigaeus* showed the presence of cardiac glycosides, triterpenoids, tannins, alkaloids, flavonoids and phenols. Petroleum ether extract were present the triterpenoids and methanolic extract present the steroids. Saponins, anthraquinones and diterpenes were totally absent in chloroform, methanol and petroleum ether extracts. Quantitative analysis revealed that the *C. epigaeus* contain significant amount of alkaloids, phenol, terpenoids and saponin. Total phenol, Tannin, steroids and flavonoids was presented in tuber 156.52 ± 10.95 mg/gm, 67.85 ± 4.74 mg/gm, 35.45 ± 2.48 mg/gm and 95.32 ± 6.67 mg/gm respectively (Nalini and Dhanaraj, 2015) [13]. The purified methanolic extract "*Aagasagarudan kizhangu*" (*C. epigaeus*) present the six phytochemical compounds such as Aromatics, 1, 2 amines, amides, cis-, Tridecanoic acid, 9, 12-Octadecadienoic acid, methyl ester, (2-phenyl-1, 3-dioxolan-4-yl) methyl ester, etc. and organic functional groups such as amines, alkenes, ester etc. which are reported with many biological activities and effective medicinal properties (Karthic *et al.*, 2018) [18].

Only the methanol and acetone extract included cardiac glycosides, glycosides, tannin, triterpenoids, and steroids; the petroleum ether and hexane extract contained triterpenoids and steroids. Acetone extracts did not include phenols, anthraquinones, alkaloids, flavonoids, or phenolbatannins (Vasantha *et al.*, 2012) [23]. GCMS analysis show the alpha-linolenic acid and 4H-pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl as main chemical constituents in the methanolic extract of *C. epigaeus* (Chitra *et al.*, 2020). According to Venkata *et al.*, (2017) [20, 21], the whole plant contains glycosides, carbohydrates, and saponins present. Aerial parts (leaves and stem) present the triterpenes and triterpenoidal saponins of the *C. epigaeus*, while roots are only found the steroidal saponins. Kothawade *et al.*, (2019) [22], was reported phytoconstituents such as tannins, alkaloids, saponins and flavonoids were found out in the plants. These compounds have been clinically shown to be effective in treating various kinds of human diseases and disorders.

Conclusion

In the present review study, we cover ethnobotanical and phytochemical constituents of traditional medicinal plant species of *Corallocarpus epigaeus* Cl. (Cucurbitaceae). Different parts of the plants such as tubers, fresh fruit, leaf, ripen mature and immature fruits, and seeds of the *C. epigaeus* have been studied extensively by many researchers. Interestingly, most of the reports were carried out in the tuber part focus and rest of parts neglected. The ethnobotanical study undertaken in this plant displayed multipurpose usage like snakebite, particular old snakebite, philitic cases, applied to bitten part of snakebite, asthma, fever and different type of diabetes control. Considering its present many phytochemical and variety of pharmacological activities, biological activity *C. epigaeus* could be suggest as good candidates for potential new drugs discovery. A candidate of the potential traditional medicinal plants are resources of herbal medicines or formulation and many of the modern medicines are produced indirectly from medicinal plants. It is urgent focus required for study of the biological activity and their application in curing of various disease.

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Reference

- Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol II. 2nd Ed. Lalit Mohan Basu, Allahabad, 1935, p. 1166-1167.
- Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol IV. Reprint ed. Lalit Mohan Basu, Allahabad, 1996, p. 1664.
- Mangathayaru K. Pharmacognosy: An Indian Perspective. Pearson Education in South Asia, 2013, p. 169.
- Abid R, Kanwal D, Qaiser M. The seed atlas of Pakistan-X. Cucurbitaceae. Pakistan Journal of Botany. 2015;47(2):429-436.
- Singh D, Dathan ASR. Structure and development of the seed coat in Cucurbitaceae. IX. Seeds of *Corallocarpus*, *Kedrostis* and *Ibervillea*. Bulletin of the Torrey Botanical Club. 1974;101(2):78-82.
- Sudarsanam G, Siva Prasad G. Medical ethnobotany of plants used as antidotes by Yanadi tribes in South India. Journal of Herbs, Spices and Medicinal Plants. 1995;3(1):57-66.
- Reddy KN, Reddy CS, Trimurthulu G. Ethnobotanical survey on respiratory disorders in Eastern Ghats of Andhra Pradesh, India. Ethnobotanical Leaflets. 2006;10:139-148.
- Swarnkar S, Katewa SS. Ethnobotanical observation on tuberous plants from tribal area of Rajasthan (India). Ethnobotanical Leaflets. 2008;12:647-666.
- Bhuvaneswari R, Ramanathan R, Krishnapriya P, Madheswaran A, Dhandapani R. Survey of wild tuberous medicinal plants of Kolli Hills in Namakkal district, Tamil Nadu, India. International Journal of Herbal Medicine. 2015;3(4):41-48.
- Salave AP, Diwakar PG, Reddy PG. Traditional ethno-veterinary practices in Karanji Ghat areas of Patharadi Tahasil in Ahmednagar district (M.S.), India. International Journal of Plant, Animal and Environmental Sciences. 2012;2(1):64-69.
- Umadevi U, Kamalam M. Pharmacognostical, phytochemical and heavy metal studies on an ethnomedicinal plant-*Corallocarpus epigaeus* (Rottl. & Wild.) Clarke. International Journal of Pharmacognosy and Phytochemical Research. 2012;4(3):117-121.
- Uthrapathy S, Mohamad M, Krishnamoorthy G, Ravindhran D, Victor G, Govinda R, *et al.* Analgesic and anti-arthritis effect of *Corallocarpus epigaeus*. Clinical Biochemistry. 2011;45(4):749-756.
- Nalini V, Dhanaraj TS. Analysis of bioactive compounds and elements in *Corallocarpus epigaeus* rhizomes. World Journal of Science and Research. 2015;1(2):92-97.
- Gupta J, Ali M, Pillai KK, Velasco-Negueruela MJ, Pérez-Alonso F, Contreras FO. The occurrence of Ishwarane and Ishwarone in the root oil of *Corallocarpus epigaeus* Benth. EX Hook F. Journal of Essential Oil Research. 1997;9(6):667-672.
- Shri CN, Balaji J, Venkatramanan J, Madhumathi KL. Pharmacognostical and preliminary phytochemical screening of the root and rhizome of *Corallocarpus epigaeus*. International Journal of Pharmaceutical and Biomedical Research. 2010;1(1):24-27.
- Jayaseelan M, Arumugam T, Senthil Kumar P, Thangaraj N. Biochemical quantification and antibacterial properties of *Corallocarpus epigaeus*. Bioscience Discovery. 2016;7(1):11-16.
- Subasini U, Sundaraganapathy R, Thangadurai SA, Malathy R, Rajamanickam G. Determination of nutritive value for certain South Indian indigenous species. International Journal of Pharmacy and Industrial Research. 2011;1(1):17-21.
- Karthic VM, Poongodi B, Murugesan S, Banumathi V. Assessment of heavy metals, phytocompounds and functional groups in the Siddha herb *Aagasagarudan Kizhangu*. International Journal of Current Research in Chemistry and Pharmaceutical Sciences. 2018;5(6):85-93.
- Bhavani MB, Leelavathi S, Shareef MI. Preliminary phytochemical investigation on a few Cucurbitaceae plants. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 2013;4(4):255-260.
- Venkata Suresh J, Nagarjuna Reddy G, Ramanarayana Reddy V, Rajani G. Pharmacognostical evaluation of tuberous roots of *Corallocarpus epigaeus*. Asian Journal

- of Phytomedicine and Clinical Research. 2017;5(4):150-160.
21. Venkata Suresh J, Nagarjuna Reddy G, Ramanarayana Reddy V. Pharmacognostical evaluation of aerial parts of *Corallocarpus epigaeus*. Asian Journal of Research in Chemistry and Pharmaceutical Sciences. 2017;5(4):160-171.
 22. Kothawade K, Siddiqui AR. Proximate phytochemical analysis of *Corallocarpus epigaeus* (Arn.) Cl rhizomes and *Vernonia anthelmintica* Willd seeds. Journal of Drug Delivery and Therapeutics. 2019;9(4-s):1203-1206.
 23. Priyavardhini S, Vasantha K, Soris TP, Mohan VR. Efficacy of phytochemical and antibacterial activity of *Corallocarpus epigaeus* Hook. f. International Journal of PharmTech Research. 2012;4(1):35-43.
 24. Ganesan S, Pandi RN, Banumathy N. Ethnomedicinal survey of Alagarkoil Hills (Reserved Forest), Tamil Nadu, India. E Journal of Indian Medicine. 2007;1:1-18.
 25. Mulimani MB, Chavan NS. Eco-climatic diversity of wild cucurbits in Bijapur District, North Karnataka, India. Nature Environment and Pollution Technology. 2007;6(1):177-182.
 26. Sivkumar T, Kannan K, Manavalan R. Pharmacognostical investigations of *Corallocarpus epigaeus* (Rottler) C.B. Clarke. RASĀYAN Journal of Chemistry. 2009;2(1):159-166.
 27. Shivakumar HM, Parashurama TR. Phyto-ethnomedicinal knowledge of folklore people in Kappathgudda region of Gadaga District, Karnataka, South India. International Journal of Science and Research. 2012;3(11):3080-3091.
 28. Murthy SR, Ravindranath D, Sandhya Rani S, Pullaiah T. Ethnobotany and distribution of wild and cultivated genetic resources of Cucurbitaceae in the Eastern Ghats of Peninsular India. Journal of Herbal Medicine. 2013;2(6):149-158.
 29. Sethi P. Micro morphological studies on rhizome of *Corallocarpus epigaeus* Benth. ex Hook. f. Researcher. 2017;9(12):71-73.
 30. Sundaram SS, Suresh K, Prasanna Sundaram S. Indigenous knowledge on medicinal plants used to treat various human ailments in Madurai District, Tamil Nadu, India. Journal of Medicinal Plants Studies. 2019;7(3):117-123.
 31. Loganathan C, Sakayanathan P, Thayumanavan P. Isolation of bioactive components from *Corallocarpus epigaeus* tuber and inhibitory potential against various molecular forms of acetylcholinesterase. The Journal of the Alzheimer's Association. 2020;16(9):1.
 32. Chandra SJ, Lakshmidevi N, Mruthunjaya K, Huded S. Medicinal plants used in tribal and folklore medicine in rural areas of Mysore district. International Journal of Biology, Pharmacy and Allied Sciences. 2014;3(5):797-836.