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A STUDY OF NEW SPECIES OF GIN BERRY (GLYCOSMIS ALBICARPA): A REIVEW

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Abstract

The present article is a systematic and constructive review of various species of Glycosmis and emphasizing of new species of gin berry that is *Glycosmisalbicarpa*. The genus *Glycosmis* comprise 51 accepted species broadly distributed in Australia, China, India, and South-East Asia. Traditionally, *Glycosmis* species are used in folk medicines to treat cancer, anaemia, rheumatism, fever, cough, liver-related problems, skin ailments, intestinal worm infections, wounds, and facial inflammation. 307 chemical constituents have been isolated and characterized from different species of the genus *Glycosmis*; among these constituents, alkaloids, flavonoids, terpenoids, phenolics, and sulphur-containing amides are the major bioactive compounds. This review aims to provide readers with the latest information highlighting on new species of *Glycosmis*, its habitat, features, and uses of *Glycosmisalbicarpa*. Detail review of Pharmacological, toxicological and morphological study of *Glycosmisalbicarpa* is yet to be scrutinized. So that study of this new species can be advancement in Pharmaceutical industry for formulation of various dosage forms for treatment of various ailments. The recent discovery is the new species of Gin Berry which was found in India (kanyakumari wildlife sanctuary) and reported on 5th march 2022 in the newspaper (The HINDU).

Key word: Gin Berry, Glycosmisalbicarpa, Pharmaceutical Industry.

Glycosmis is a genus of flowering plants in the citrus family, *Rutaceae* and tribe *Clauseneae.* It is in the subfamily Aurantioideae, which also includes genus Citrus. It is a genus of the subtribeClauseninae, which are known technically as the remote citroid fruit trees.

Plants of the genus are shrubs and small trees. New growth is coated densely in rusty hairs. The leaves are simple blades or are divided into narrow leaflets, sometimes pinnately. The small flowers have five white petals and are borne in compound inflorescences. The fruit is a juicy or dry berry. Some species can be variable in appearance. Modern pharmacological studies have shown that the crude extracts and compounds isolated from this genus exhibit a broad spectrum of biological activities like anticancer, antimicrobial, anti-

inflammatory, antipyretic, antidiabetic, antioxidant, larvicidal, insecticidal, hepatoprotective, wound healing, antiviral, antidiarrheal, and anxiolytic.[1]

There are more than 50 species of Glycosmis have been identified and accepted. These species are.[2]

1. G. aglaioides	11.G.decipiens	21. G. lucida	31. G. parkinsonii	41. G. Puberula
2. G. albicarpa	12. G. dinhensis	22. G. macrantha	32. G. parva	42. G. singuliflora
3. G. angustifolia	13. G. elongata	23. G. macrocarpa	33. G. parviflora	43. G. sternura
4. G.borana	14. G. eryhtrocarpa	24. G. macrophylla	34. G. pentaphylla	44. G. subopposita
5. G. chlorosperma	15. G esquirolii	25. G. mansiana	35. G. perakensis	45. G. sumatrana

6. G. collina	16. G.esquirolii	26. G. mauritiana	36. G. petelotii	46. G. superba
7. G.craibii	17. G. gracilis	27. G. monatana	37. G. pierrei	47. G. tetracronia
8. G. crassifolia	18. G. greenei	28. G. monticola	38. G.pilosa	48. G.tomentella
9. G. cyanocarpa	19. G. longipes	29. G. oligantha	39. G. pseudoracemosa	49. G. trichanthera
10. G. cymosa	20. G.longisepala	30. G. ovoidea	40. G. Pseudosapindoides	50. G. trifoliata

Glycosmis is a perennial shrub indigenous to the tropical and subtropical regions of India, China, Sri Lanka, Myanmar, Bangladesh, Indonesia, Malaysia, Thailand, Vietnam, Philippine, Java, Sumatra, Borneo and Australia. *Glycosmis* species are evergreen shrub or small tree growing up to 5 metres tall.
The plant is harvested from the wild, mainly for local use as a food and medicine. It has gained in popularity as an edible fruit in parts of the Caribbean, where it is sometimes cultivated; it is also sometimes cultivated as an ornamental in various parts of the tropics.

The plant is used extensively within these regions as a traditional medicine for the treatment of a variety of ailments including cough, fever, chest pain, anemia, jaundice, liver disorders, inflammation, bronchitis, rheumatism, urinary tract infections, pain, bone fractures, toothache, gonorrhea, diabetes, cancer and other chronic diseases.[3]

Several alkaloids and amides that have been isolated from the plant are reported to have biological activities.Glycozolidol, a carbazole alkaloid isolated from the roots, is active against some gram-positive and gram-negative bacteria. Leaf and stem bark extracts have been shown to have a healing effect upon damaged liver tissue. Extracts of the root bark have been shown to exhibit significant activity in the treatment of diarrhoea. An ethanol

extract was found to be more effective at lower dosages than an aqueous extract. A steam distillate

of the leaves has shown high antifungal activity against Cladosporiumcladosporioides, but no activity against Staphylococcus aureus or Escherichia coli.[4]

According to the Plants of the World Online (POWO) database, the genus *Glycosmis* is comprised of 51 accepted species and 22 varieties. The genus *Glycosmis* belong to the family *Rutaceae*, subfamily Aurantioideae and tribe Clauseneae. *Glycosmis* can be found throughout the sub-tropical Himalayas, tropical forests at low altitudes, and across warm or temperate regions around the world. Exhibit a characteristic sweet smell. Fruits are edible with fleshy pericarp, sweet taste (Hofer and Greger, 2000), and a raw gin-like flavour. Hence, it is commonly known as an **orange berry**.[5]

Stems, roots, fruits, and leaves of this plant are commonly utilized in the traditional medicine system. The stem part of the plant is used as a toothbrush; therefore, it is also called the **toothbrush plant.**[6]

This review presents a detailed survey of the literature on various traditional uses, medicinal properties, phytochemistry, pharmacological aspects, formulation, and toxicology of the genus *Glycosmis*. *Glycosmis* is a rich source of acridone, carbazole, quinolone and quinazoline types of alkaloids, flavonoids, phenolic glycosides, quinones, furoquinolines, terpenoids, sulphur-containing amide, gums, reducing sugars, tannins, and saponins. *Glycosmis* is an abundant source of sulphur-containing amides; more than 70 sulphur-containing amides were isolated and reported from different species of *Glycosmis*

A literature survey regarding traditional uses, chemical constituents, and biological activities of genus *Glycosmis* suggests that only a few species have been investigated so far. Out of 51 species, only 23 species of genus *Glycosmis* have been reported for their medicinal uses and phytochemistry as *G. stenocarpa* (Drake) Guillaumin, *G. puberula* Lindl. exOliv., *G. chlorosperma* Spreng., *G. citrifolia* Lindl., *G. rupestris* Ridl., *G. mauritiana* (Lam.) Tanaka,

G. lucida Wall. ex C.C. Huang, *G. angustifolia* Lindl. ex Wight &Arn., *G. cyanocarpa*, *G. crassifolia* Ridl., *G. parva* Craib, *G. pentaphylla* (Retz.) DC., *G. cochinchinensis* (Lour.) Pierre, *G.arbores* (Roxb.) DC., *G. elongata* Bakh. f., *G. montana* Pierre, *G. parviflora* (Sims) Little, *G. macrophylla* Miq., *G. petelotti*, *G. sapindoides* Lindl. exOliv., *G. pseudoracemosa* (Guillaumin) Swingle, *G. craibii* Tanaka, *G. trichanthera* Guillaumin (Tropicos.org, 2021). Methanolic extract from dried leaves of *Glycosmis* species shows antifungal, insecticida and antimicrobial activity; ethanolic extract shows antimicrobial, membrane stabilization and anxiolytic active. Ethanol and methanol extract from *G. pentaphylla* possess antioxidant activity. The methanolic and chloroform extract obtained from its leaves and stem displays antibacterial and antifungal activities, respectively. Petroleum ether extract of *G. pentaphylla* was reported useful against insecticidal and larvicidal activity. *G. pentaphylla* is well explored for human ovarian cancer, and *G. arborea* has been evaluated for

biological activities such as antitumour, antifeedant, and antibacterial activity. Compounds from *G. stenocarpa* showed inhibition against Pepper Mild Mottle Virus. A detailed description of various bioactivities possessed by *Glycosmis* species is further elaborated in the pharmacology section.[7]

Glycosmis is a shrub used in traditional and folk medicine and 11 species were used in the preparation of various herbal medicines in China. Leaves of these plants are used for their anti-inflammatory activity. The juice of the leaves is used to treat skin diseases, fever, liver-related problems, eczema, wounds, helminthiasis .

G. pentaphylla has been explored for its antimicrobial potential against various gram-negative and gram-positive bacteria, fungi, helminths, and nematodes. The methanolic stem extract displayed significant inhibitory activity against *Escherichia coli*, and moderate action against *Salmonella paratyphi* and other tested bacterial species. Antibacterial assay was

performed by disc diffusion method using 14 different bacterial strains and the minimum inhibitory.[8]

Our resent discovery is to emphasis on new species of Gin Berry *Glycosminalbicarpa*which was reported by the team of scientists from the botanical survey of India (BSI). The new species was reported in the newspaper THE HINDU dated on 5/3/2022.

According to the report and literature survey form the Botanical scientists a new gin berry species are found to be in **KANYAKUMARI WILDLIFE SANCTURARY** in Tamil Nadu. Kanyakumari wildlife sanctuary is adjacent areas of **KALAKKAD MUNDANTHURAI TIGER RESERVE AND NEYYAR WILDLIFE SANCTURY** of Kerala state. This tip of the Indian peninsula is a unique geographic point surrounded by all three of the sub-continent's vast oceans.[9]

Glycosmisalbicarpa is a distinct large white fruit is endemic to a south Western Ghats. The species belongs to the orange family *Rutaceae*. They are also found to have medicinal values and food. Plants are small tree, erect, branches, hard stem 15 inches base diameter, black rough bark found in wild, moist, shady, misty hill rocky. Plants are seen to have a height of 3 meters. Leaves are alternate, ovate, oblong, acute, light aromatic, size up to 15 x 8 cm. Flowers are axillary, 05 petals, and diameter: 04 mm, white, good fragrance. Fruit are

berry ovoid green into white, size up to 2.5 X 1.2 cm, edible delicious sweet with light aromatic aromatic taste. Seeds are green, single, ovoid, soft and size up to 1.5 X 0.5 cm.

GlycosmisAlbicarpa reported to have unique characteristics of 'Gin aroma'. It is commonly used as an edible fruits. The species is an also a larval host Plant for butterflies like other species of Glycosmis. The species is an evergreen small tree, was found as undergrowth in the Tirunelveli semi- evergreen forests at the Panagudi forest section of the wildlife sanctuary as a single population that covers an areas of approximately 2 sq. km. the four sub-populations of the species were located in the valley between two hillocks, with each having three-seven mature individuals in groups.[10]

The flowering natural regeneration and seedling recruitment of this taxon is found to be fairly good within the locality, while habitat modification causes a major threat to the survival of this species. This discovery not only re-emphasises the uniqueness and endemism in western Ghats flora.

Botanical survey of India (BSI) has already started taxonomic and floristic studies and data is yet to be received. It has the objective to explore plant resources of the country and to identify plant species with economic virtues.

Conclusion:

Traditionally, *Glycosmis* species are used in folk medicines to treat cancer, anaemia, rheumatism, fever, cough, liver-related problems, skin ailments, intestinal worm infections, wounds, and facial inflammation. 307 chemical constituents have been isolated and characterized from different species of the genus *Glycosmis*; among these constituents, alkaloids, flavonoids, terpenoids, phenolics, and sulphur-containing amides are the major bioactive compounds. The recent discovery to identify the new species of gin berry *Glycosmisalbicarpa* is a unique discovery by the Botanic Survey of India (BSI). This review aims to provide readers with the latest information highlighting on new species of *Glycosmis* its habitat, features, and uses of *Glycosmisalbicarpa*. Detail review of Pharmacological,

toxicological, phytochemistry and morphological of study of *Glycosmisalbicarpa* is yet to be scrutinized. The study of this new species can be advancement in Pharmaceutical industry for formulation and development of various dosage forms for the treatment of various ailments.

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