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## A COMPREHENSIVE REVIEW OF *BAUHINIA X BLAKEANA* - THE HONG KONG ORCHID TREE

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### ABSTRACT

*Bauhinia x blakeana* is a hybrid of *Bauhinia purpurea* and *Bauhinia variegata*, originated in Hong Kong in 1880. In India it is known as Rakta Kanchan kachnar. It features large thick leaves and stunning purplish red blooms, making it an official flora emblem of Hong Kong. Lawrence Ramsden of the University of Hong Kong's Department of Botany is seeking to locate additional people that can generate seeds, which could improve multiplication of the tree for horticulture. Two earlier occurrences of seeds collected from *Bauhinia* × *blakeana* specimens failed to germinate. *Bauhinia blakeana*, often known as the Hong Kong Orchid Tree, is a gorgeous evergreen with crimson-purple blooms and has been a prominent horticultural plant in many Asian nations. It is commonly used in folk medicine for pain-related illnesses and possesses antidiabetic, antibacterial, anti-inflammatory, analgesic, haemostatic, and diuretic characteristics. It is rich in bioflavonoids with antioxidant and  $\alpha$ -glucosidase inhibitory qualities, making it a viable source of medicinal herbs for diabetes prevention and therapy. Genetic biology has made major contributions to the studies of hybrid speciation, with genetic markers promising in establishing the status of putative hybrids and determining the ancestry of hybrids.

**Keywords:** *Bauhinia blakeana*, *Bauhinia purpurea*, *Bauhinia variegata*, Hong Kong  
Orchid Tree

## INTRODUCTION

*Bauhinia x blakeana* is a hybrid of *Bauhinia purpurea* and *Bauhinia variegata*. In India it is known as Rakta Kanchan kachnar. The flower is an official flora emblem of Hong Kong and is featured on the state flag as well as on the back of Hong Kong's coinage. *Bauhinia × blakeana* [1] commonly called the Hong Kong orchid tree, [2] is a hybrid leguminous tree of the genus *bauhinia*. it originated in Hongkong in 1880 and probably all of the cultivated trees derive from one cultivated in the Hongkong botanical gardens and widely planted in Hong Kong starting in 1914 [3]. Lawrence

Ramsden of the University of Hong Kong's Department of Botany is conducting the hunt to find out if there are any individuals that can generate seeds - if so, they could benefit propagation of the tree for horticulture [4]. Two prior occurrences of seeds recovered from *Bauhinia × blakeana* specimens failed to germinate [5]. At the time (March in Hong Kong), both *B. blakeana* and *B. purpurea* were flowering, consequently, the pollens for growth of *B. blakeana* seed pods may have been donated from *B. purpurea* [6].

Scientific classification	
Kingdom	plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Fabales
Family	Fabaceae
Genus	<i>Bauhinia</i> Species <i>B .x blakeana</i>

**Binomial name-***Bauhinia x blakeana* Dunn,  
**Distribution in India-**Karnataka- District Bengaluru, **Indian name-** Rakta Kanchan kachnar, **Native-** Hong Kong.  
**History-**The *B. × blakeana* tree, discovered in 1880, was first described in 1908 [7] by Stephen Troyte Dunn and named after Sir Henry and Lady Blake. Its clonal origin suggests it may be susceptible to epidemics but has avoided serious diseases. To prevent disease susceptibility, re-hybridizing the parental species could be attempted, crossing *B. purpurea* and *B. variegata*.

**Molecular Evidence for the Hybrid Origin of *Bauhinia blakeana* (Caesalpinioideae)-*Bauhinia blakeana*** Dunn, the Hong Kong Orchid Tree, is a beautiful evergreen with crimson-purple flowers. The first wild *B. blakeana* was discovered and spread in Hong Kong by the Missions Étranger's fathers in 1908. The taxonomic status of *B. blakeana* has been a topic of interest for Asian botanists. Although [8]. Lau concluded that it is plausible for *B. purpurea* and *B. variegata* to interbreed because their flowering seasons largely overlap and both are xenogamous

and have common pollinators, they discovered just a few features of phenotypic intermediacy in *B. blakeana*. The homology of ITS1 sequences among *B. blakeana*, *B. purpurea*, and *B. variegata* provides definitive molecular proof for de Wit's theory that *B. blakeana* is an interspecific diploid hybrid of *B. purpurea* and *B. variegata*. Further investigations on the genetic variation of the wild population of the parental species may provide insight into the geographical origins of the parents.

#### Pharmacological Uses-

**1. Anti-microbial activity**-Antimicrobial activity of methanolic extract of leaves and flowers of *Bauhinia x Blakeana* was determined against Gram-positive and Gram-negative microscopic organisms. Streptomycin was utilized as reference principles for assessment of action. It was revealed that fluid concentrate has antibacterial activity against *Escherichia coli* and *Lactobacillus* leaves had good activity than flowers [9].

**2. Antioxidant activity**-The study was aiming to construct a model of isolated frog heart for the generation of oxidative stress by employing  $H_2O_2$  and evaluate the antioxidant activity of *Bauhinia X blakeana* Linn., leaf extract. When ringer solution containing 1mM of  $H_2O_2$  perfused to frog heart preparation, which shows the development of oxidative stress on frog heart by  $H_2O_2$  solution, this might be related

to desensitization of receptors. This result supports the frog heart model for induction of oxidative stress by  $H_2O_2$  [10, 11].

**3. Anti-depressant like activity**-The study aimed to assess *Bauhinia blakeana*'s antidepressant effects and its fractions on mice with LPS-induced neuroinflammation. Results showed that the *Bauhinia blakeana* hydroalcoholic extract (BbHA) significantly reduced depression symptoms in healthy micewhile a methanolic fraction (BbMe) obtained through chemical separation displayed a similar antidepressant effect in behavioural tests. Moreover, when provided to animals with LPS-induced depression, both BbHA and BbMe successfully cured the depressed symptoms generated by LPS [12, 13]. The study highlighted the possible antidepressant and regulating effects of *Bauhinia blakeana* and its fraction, suggesting the involvement of rutin, a major component in the active fraction, in mediating these observed effects [14, 15].

**4. Antibacterial activity**-The study focuses on *Bauhinia blakeana*, commonly known as the Hong Kong orchid tree, which retains significance in traditional medicine spanning Africa, Asia, South America, and Central America. India's traditional medicine has recently exhibited interest in such plants due to their bioactive chemical content [16]. This sterile hybrid plant, a member of the Fabaceae family, is cultivated largely for its horticultural value. The

findings shows that the discovered antibacterial efficiency [17] can be attributable to these secondary metabolites present in *Bauhinia blakeana's* stem and bark extracts.

### 5. Phytochemical Screening, Antioxidant Activity and $\alpha$ -Glucosidase Inhibitability of *Bauhinia* $\times$ *blakeana* Dunn Leaf and Flower Extracts-

*Bauhinia blakeana*, a hybrid species between *B. purpurea* and *B. variegata*, [18] is used in folk medicine for pain-related diseases and has been found to possess antidiabetic, antibacterial, anti-inflammatory, analgesic, haemostatic, and diuretic activities [19]. It is rich in bioflavonoids with antioxidant and  $\alpha$ -glucosidase inhibiting properties, [20, 21] making it a potential source of medicinal herbs for the prevention and treatment of diabetes mellitus (DM). *Blakeana* leaf and flower are also known as sources of tannins, with many organic acids found in plants such as fruits and vegetables [22]. The primary phytochemicals in *B. blakeana* flowers include carbohydrates, amino acids, triterpenoids, tannins, and flavonoids contained in *B*  $\times$  *blakeana* leaves are also found in other *Bauhinia* species such as *B. variegata*, *purpurea*.

### CONCLUSION

*Bauhinia*  $\times$  *blakeana*, also known as the Hong Kong orchid tree, is a hybrid plant with significant botanical, historical, and

pharmaceutical significance. Originally found in Hong Kong in the late 19th century, it is renowned for its purplish-red blossoms and ornamental appeal. Its hybrid origin is a cross between *Bauhinia purpurea* and *Bauhinia variegata*. Despite being primarily propagated throughgrafting, research is underway to study its potential for seed production for horticultural purposes. The tree also possesses pharmacological qualities, including antibacterial, antioxidant, and depressive actions. Further research and conservation efforts are needed to fully explore its potential.

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