

MEDICINAL VALUE OF ORCHID-A NOVEL PERSPECTIVE

Article Id: AL202171

¹Raghuram Pawar*, ²S. T. Bhatt and ¹R. M.Mangroliya¹Department of Floriculture and Landscape Architecture, Navsari Agricultural University,
Navsari -396450, Gujarat, India²Horticulture Polytechnic Navsari Agricultural University, Navsari -396450, Gujarat, IndiaEmail: mangroliyaharshil@gmail.com

Orchids are members of the family Orchidaceae, one of the largest families of flowering plants. The estimated number of orchid species varies from 12,000 to 35,000, contributing up to 10% of all flowering plant species in the world (Dressler, 1981). Orchids form 9% of our flora, and about 1331 species are reported from India (Mishra, 2007). Orchids are extremely popular for their mesmerizing marvelous flowers in the whole world, but it is in the lesser know that many species are used in traditional systems of medicine and form remedial measures for a number of ailments. Out of many medicinal and aromatic plants, orchids have been used as the traditional system of medicines. This may account for the use of orchids as aphrodisiacs in ancient civilization. When we study the history of the ancient alternative system of medicine, Ayurveda and Traditional Chinese Medicine (TCM) are one of the forefronts. Asthavargha is an important ingredient of various classical Ayurveda formulations like chyawanprasha. Out of eight constituents of Asthavargha, four have been reported to be orchids as ‘*Jivaka*’ (*Malaxismuscifera*), ‘*Rishbhaka*’ (*M. acuminata*), ‘*Riddhi*’ (*Habenaria intermedia*), and ‘*Vridhhi*’ (*H. edgeworthii*). A wide range of chemical compounds is, presented, including alkaloids, bibenzyle derivatives, flavonoids, phenanthrenes, and terpenoids which have been isolated from various orchids from different parts of the world. Extracts and metabolites of these plants, particularly those from flowers, roots, and leaves, possess useful in pharmacological activities *viz.* diuretic, anti-rheumatic, anti-inflammatory, anti-carcinogenic, hypoglycaemic activities, anti-microbial and, anti-convulsive activity.

Orchidaceae is a diverse and widespread family of flowering plants with beautiful, colorful, and fragrant flowers, commonly known as the orchid family. Along with the Asteraceae, this is one of the two largest families of flowering plants, with between 21,950 and 26,049 currently accepted species, found in 880 genera (Stewart and Griffiths, 199). The

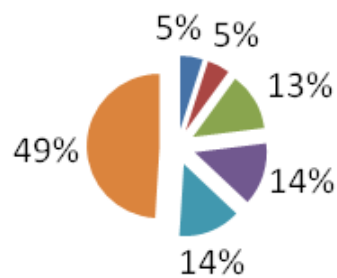
family also encompasses about 6–11% of all seed plants (Pillon and Chase, 2007). The largest genera are: *Bulbophyllum* (2,000 species), *Epidendrum* (1,500 species), *Dendrobium* (1,400 species) and *Pleurothallis* (1,000 species). Selecting which of the two families is larger is still under debate, as concrete numbers on such enormous families are constantly in flux. The Orchidaceae is currently placed in the order Asparagales by the APG III system of 2009 (Pillon and Chase, 2007). The name Orchid comes from the Ancient Greek word *órkhis*, literally meaning “testicle”, because cultivated orchids are tropical or subtropical, but quite a few which grow in colder climates can be found on the market. Temperate species available at nurseries include *Ophrysapifera* (bee orchid), *Gymnadeniaconopsea* (fragrant orchid), *Anacamptis pyramidalis* (pyramidal orchid), and *Dactylorhizafuchsia* (common spotted orchid). Orchids of all types have also often been sought by collectors of both species and hybrids such, many hundreds of societies and clubs worldwide have been established. These can be small, local clubs such as the Sutherland Shire Orchid Society or larger, national organizations such as the American Orchid Society. Both serve to encourage the cultivation and collection of orchids, but some go further by concentrating on conservation or research. *Vanilla plantfolia* is a commercially important orchid as it is the source of vanillin used as a food stuff flavoring.

Medicinal Importance

Orchids have been used in traditional medicine in an effort to treat many diseases and ailments. They have been used as a source of herbal remedies in China since 2800 BC. Orchids have many medicinal properties like alkaloids, bibenze derivatives, flavanoids, terpanoids, Phenanthrenes. They can be used to cure many diseases viz., Diuretic, anti-inflammatory, anti-carcinogenic, anti-microbial, anti-convulsive, relaxation, neuroprotective, anti-rheumatic etc. *Gastrodiaelata* is one of the three orchids listed in the earliest known Chinese Materia Medica. Theophrastus mentions orchids in his *Enquiry into Plants* (372–286 BC). In the following paragraphs, the medicinally important plants are listed along with their uses and important chemical constituents of medicinal value. Has described the uses of orchids for drugs and chemicals. Hegde and Ingahalli (1988) have described the medicinal usage of some orchids. Singh and Duggal (2009) have given an overview of medicinal orchids along with recent pharmacological investigations. In the following paragraphs, the medicinal uses of various orchids have been described.

Different plant part of orchid used in medicine

■ Leaves ■ Whole plant ■ Stem ■ Shoot ■ Root ■ Tuber



Vanda roxburghii

It contains β -sitosterol, γ -sitosterol, heptacosane, octacosanol, acetyl tetracosyl ferulate, 17- β -hydroxy-14,20-epoxy-1-oxo-[22R]-3 β -[O- β -Dglucopyranosyl]-5,2withadienolide and melianin. Sterols are anti-inflammatory agents. β -sitosterol has been shown to possess anti-inflammatory and anti-pyretic properties. Epilepsy is one of the most common disorders of the central nervous system (CNS). Currently, available treatment for epilepsy possesses major side effects like minimal impairment of central nervous system to death due to aplastic anemia or hepatic failure as a result of which sufferings of patient increase. Since plants have provided many drugs in the past and they remain a rich source of novel compounds, hence an attempt is made to evaluate anticonvulsant effects of alcoholic extract of *Vanda roxburghii*.

Vanda tessellate

The traditional use indicates that various parts of this plant are likely to have several pharmacological properties. Lawler reported that several Ayurvedic type preparations containing this plant (root or whole plant) were used as an aphrodisiac and given for impotence and barrenness. Furthermore, one of the authors (Suresh Kumar P.K.) has come across the traditional use of this plant root for impotence in males in Amboori village in Thiruvananthapuram district. In view of these, in the present study, we have evaluated the effects of various parts of this plant on male sexual behavior and reproductive performance in

mice. The active alcohol extract of the flower as also subjected to general short-term toxicity studies in mice.

Rhynchostylis retusa

Common name: Foxtail Orchid, Sanskrit name: Banda and Rasna) is a medium-sized monocotyledon plant and grows in Bangladesh. The fresh leaves or their extracts traditionally is used to treat rheumatic disease, ear pain, blood dysentery, skin diseases, and external inflammations (Hossain, 2011; Siljaet *al.*, 2008; Jonathan and Raju, 2005). Various preparations of this plant are also traditionally used to cure asthma, tuberculosis, epilepsy, vertigo, palpitation, kidney stone, and menstrual disorders (Hossain, 2011). It is reported that the plant showed significant antibacterial activity against *Bacillus subtilis* and *Escherichia coli*. Although this plant is traditionally applied for the treatment of several diseases, but to our knowledge, there are no systematic scientific studies on it. This paper deals with the analgesic and anti-inflammatory activities of *Rhynchostylisretusa*(L.) Blume in mice model.

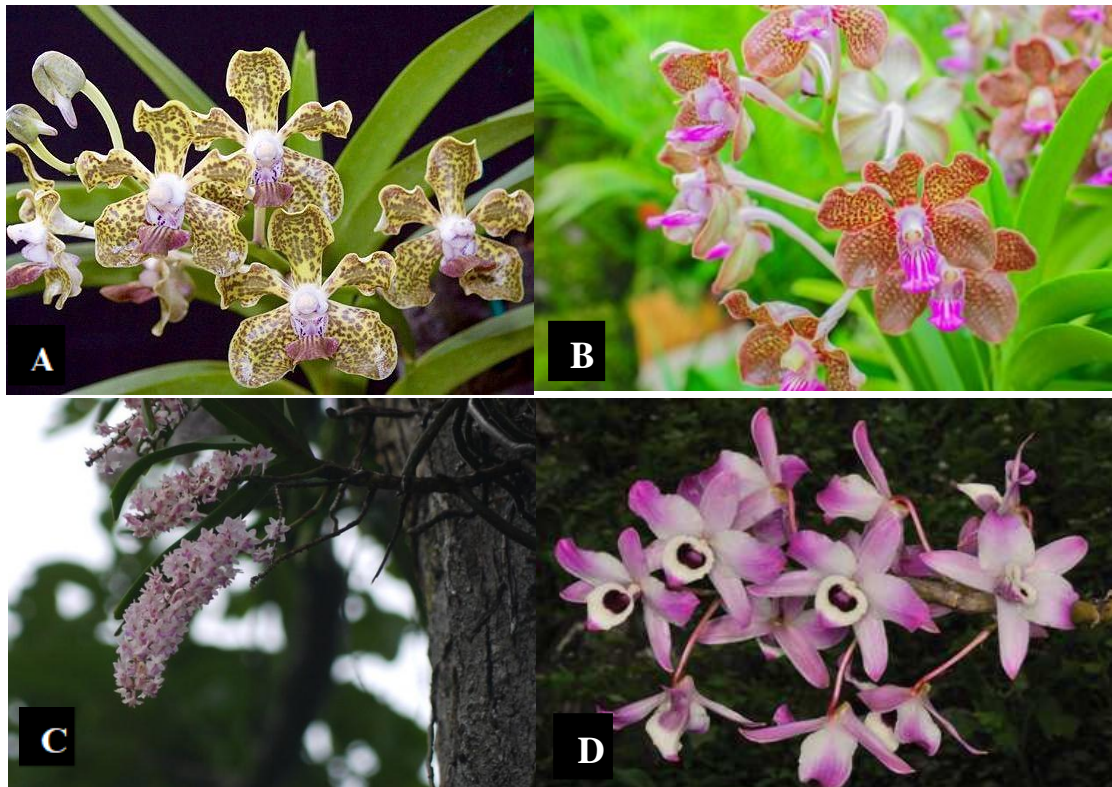


Figure 1: (a) *Vanda roxburghii* (b) *Vanda tessellate* (c) *Rhynchostylisretusa*(d) *Dendrobium nobile*

Dendrobium spp.

Medicinal plants from *Dendrobium* genus are highly valued, and therefore methodologies are being developed to validate *Dendrobium* derived drugs for their therapeutic use. In a study by Ho and Chen, it has been reported that *Dendrobium* species possess anticancer activity. Their group has found that moscatilin, extracted from the stems of *Dendrobium loddigesii*, shows potent cytotoxicity against cancer cell lines derived from different tissue origins. Erianin, a natural product extracted from *Dendrobium chrysotoxum*, inhibits the growth of HL-60 cells. The ethanolic extract of stems of *Dendrobium nobile* was found to exhibit significant antioxidant activity. The antitumor and antibacterial activities of *Dendrobium nobile* extract have also been reported. After acquiring knowledge about the anticancer activity of different *Dendrobium species*, we identified and selected the plant, *Dendrobium formosum*, as there are no reports of its antitumor activity till now. To the best of our knowledge, this is the first study to demonstrate the antitumor activity of *Dendrobium formosum*.

Conclusion

From the above foregoing discussion, it can be concluded that the medicinal orchids belong mainly to the genera *Dendrobium*, *Coelogyne*, *Cymbidium*, *Cypripedium*, *Eria*, *Calanthe*, *Bulbophyllum*, *Habenaria*, *Pholidota*, *Galeola*, and *Gastrodia* used as medicinal property. A number of alkaloids have been extracted from these orchids, such as chysine, drobine, dendronine, grandifolin and crepidine. A wide range of chemical compounds are presented including alkaloids, bibenzyle derivatives, flavonoides, phenanthrenes and terpenoides which have been isolated from various orchids from different parts of the world. Extracts and metabolites of these plants, particularly those from flowers, root and leaves, possesses useful pharmacological activities. Particular attention has been given to diuretic, anti-rheumatic, anti-inflammatory, anti-carcinogenic, hypoglycemic activities, anti-microbial, anti-convulsive, relaxation and neuroprotective.

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