



MAGNOLIA FLOWER: IT'S FRAGRANCE AND CHEMICAL PROPERTIES

Soumya Bhatnagar

Rajasthan College of Agriculture, MPUAT, Udaipur

INTRODUCTION

Magnolia tree belongs to family Magnoliaceae and genus, a large group of deciduous or evergreen trees and shrubs in the flowering plant family, characterized by aromatic twigs and often large and showy flowers. Magnolia species are native to the Western Hemisphere (eastern North America, Central America, the West Indies, and some in South America and to east and south-east Asia. Today, many species of Magnolia and an ever-increasing number of hybrids can also be found as ornamental trees in large parts of North America, Europe, Australia, and New Zealand.

The flower often showy white, pink, yellow, and purple flowers of Magnolia species, such as the Southern magnolia (*Magnolia grandiflora* L.) with its large blossoms, provide aesthetic value, such as in landscaping. In addition, some species, such as houp magnolia (*Magnolia officinalis* L.) have a long history of their bark being used medicinally in herbal medicine. Ecologically, magnolias have a symbiotic relationship with beetle pollinators, provide nutrition for beetles, while receiving the benefit of pollination and magnoliaceae flowers are showy and beetle pollinated, except for Liriodendron, which is bee pollinated. The carpels of Magnolia flowers are especially thick to avoid damage by beetles who feast and crawl on them.

The leaves of Magnoliaceae species are alternate, simple, and sometimes lobed. The fruit is an aggregate of follicles which usually become closely appressed as they mature and open along the abaxial surface. Seeds have a fleshy coat and color that ranges from red to orange (except Liriodendron). The seeds of Magnolioideae are bird dispersed while the seeds of Liriodendron are wind dispersed.



Petals of Pink Magnolia

Magnoliaceae family is divided into two subfamilies:

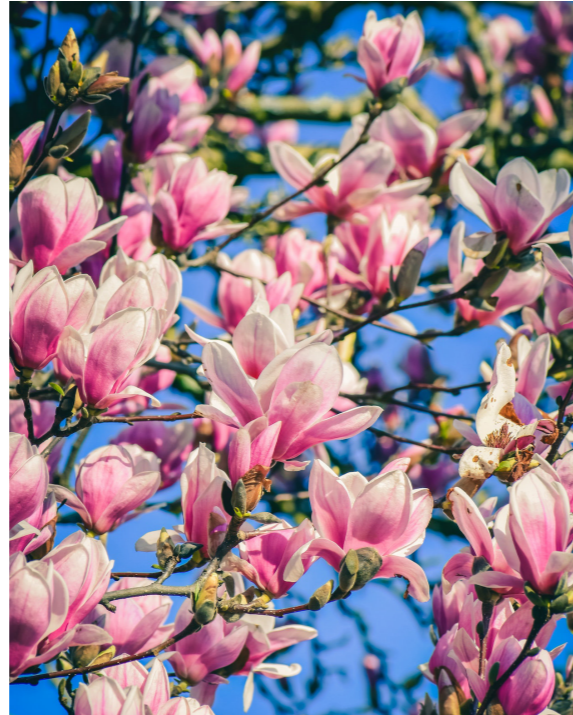
- Magnolioideae, of which Magnolia is the most well-known genus.
- Liriodendroidae, a monogeneric subfamily, of which Liriodendron (Tulip trees) is the only genus.

The family has approximately 225 species in 7 genera, although some classification systems include all of subfamily Magnolioideae in genus Magnolia.

Magnolia is a large genus of about 210 species, depending on the taxonomic scheme. It is an ancient genus having evolved before bees appeared, the flowers developed to encourage pollination by beetles. As a result, the carpels of Magnolia flowers are tough, to avoid damage by eating and crawling beetles. Fossilized specimens of cucumber magnolia (*Magnolia acuminata* L.) have been found dating to 20 million years ago, and of plants identifiably belonging to the Magnoliaceae dating back to 95 million years ago.

As all lovers of this plant are aware, the magnolia flower's beauty is found in its color, shape, and distinctive, delicate aroma. Since each of these characteristics can vary, many of

us fantastic about growing as many different varieties of magnolia in our gardens. Our lives are embellished by the fragrant beauties pink, yellow, orange, purple, pure white, creamy white, and blue-green blossoms. However, not all magnolia fans are aware of the plant's immensely varied floral phyllotaxis, which is its hidden beauty. Magnolias are some of the most primitive of our flowering trees, known for their graceful, fragrant flowers they hail from a diverse genus of trees and shrubs. They have been around for millennia with fossils dating back to the Tertiary period (they were around before our Friends the Bees arrived). They are just as at home in our Garden and Parks, as they are in their natural forest habitat, and most of them are perfectly happy to adapt to city living.



SPECIES OF MAGNOLIA FLOWER

1. Some of the most popular species, native to North America and relatively hardy and deciduous trees unless otherwise noted, are:
 - Bay Laurel magnolia, also called southern magnolia or sweet bay (*Magnolia virginiana* L.), 31-metre evergreen with thick shining leaves.
 - Big-leafmagnolia (*Magnolia macrophylla* L.), 15 metres tall with purple-based blooms.
 - Umbrella magnolia (*Magnolia tripetala* L.), 12 metres tall with leaves 60 cm that are sometimes used as rain shields.
 - Cucumber magnolia tree (*Magnolia acuminata* L.), 30 metre tree with cucumber-shaped rosy fruits.
 - Thompson's magnolia (*Magnolia x thompsoniana*), a hybrid between the umbrella magnolia and the laurel magnolia with fragrant blooms that have a spicy odour.
2. Well known Asian species of the genus Magnolia include:
 - Lily magnolia (*Magnolia liliiflora*), 4 metre (13-foot) shrubby tree that has purple blossoms with white interiors and brownish fruits
 - Yulan magnolia (*M. denudate* Desr.), 60 metre (nearly 200-foot) tree; saucer magnolia (*Magnolia x soulangeana*), a gray-barked hybrid between the lily magnolia and the yulan magnolia, which has flowers that may be white, pink, crimson, or purplish;
 - Oyama magnolia (*Magnolia sieboldii*), 9 metre (30-foot) tree with crimson fruits; and star magnolia (*M. stellata*), of similar height with spidery flowers.



Thompson's magnolia



Lily magnolia

They some species of common characteristic including which, large fragrant blooms with bowl or star shapes that grow in shrubs and evergreen and deciduous trees are how magnolias are typically described. Their leaves typically emerge in the spring after they bloom into either yellow, purple, green, pink, or white flowers. Cone-shaped fruits are also produced in the autumn. The perianth has at least three whorls, each with 9–15 sepals, just like other Magnoliaceae. The stamens are arranged in a spiral on the elongated receptacle of the bisexual blooms, which have several adnate carpels. The fruit splits apart along the dorsal sutures of the carpel, and the pollen is monocolpate. Magnolias develop their embryos in a manner similar to that of Polygonum. Much later, once the number of species increased, it was decided to split the genus into two subgenera, Yulania and Magnolia. 'Magnolia' includes the species type known as 'Magnolia Virginiana' and the critically endangered 'M. Grandiflora', both of which are found in the USA, particularly in the south-eastern states. Numerous Asian deciduous species, notably 'Magnolia Kobus' and 'Magnolia Denudata', which are valuable for horticulture on their own and as parents in hybrids, are included in the 'Yulania' genus. The Magnoliaceae have a widely dispersed range because they have endured numerous significant geographic events (Such as continental drift, the emergence of mountains, and even ice ages). This has also resulted in some species, or even species groupings, being permanently isolated while nevertheless, maintaining close interaction between other species.



Sweet bay magnolia



Yulan magnolia

CHEMICAL PROPERTIES OF MAGNOLIA FLOWER:

Magnolia bioactive compound showing anti-microbial effects. Magnolia plants have been grown for decorative purposes in Europe and America, while in Asia these plants (especially *M. obovata* and *M. obovata*) have been used in traditional medicine for centuries in order to treat gastrointestinal disorders, anxiety, cough, allergies, or asthma. The biological and healing effects of plants appear due to their secondary metabolites, which protect plants from the effects of the external environment. Knowledge about the medicinal effects from traditional medicine has resulted in a great interest in determining the plant metabolites that display biological reacts for their expected applications not only for the preparation of medicinal products, but also for their use as food supplements or biopesticides. Antimicrobial, antioxidant, antitumor, and neuroprotective or cardiovascular protective effects have been demonstrated with many secondary metabolites of the genus Magnolia.

The berries are the medicinal raw material extracted from Magnolia in accordance with both modern specification documents and traditional applications. The European and American nations just lately learned about the fruits of Magnolia. The effects of the substances were the most evident in the area of metabolism in the central nervous system and in cardiovascular treatment. They biologically active substances, among which are lignans, neolignans, terpenoids, and alkaloids, have been described in the Magnolia genus.

The most commonly studied secondary metabolites of this genus include neolignanes, namely magnolol, honokiol, and obovatol. The biological effects of Magnolia plants are mediated by the most frequent plant secondary

metabolites, i.e., magnolol and honokiol. The increase in the concentration of secondary metabolites with the growing age of the plant occurs mainly in its bark, which plays a role in the production of medicinal products from Magnolia. So, they subsequent peeling of the bark, which can also be obtained from the root of the plant, may result in a threat or even in extermination of plant source.

In recent years, and not only for the above-mentioned reason, investigation has been focused on analyzing quantities of secondary metabolites in parts of Magnolia plants other than its bark. Leaves should be available sources of useful substances in these plants, which could be subject to danger if they are torn apart, in order to protect them from damage that could occur during the harvesting of their bark. However, magnolol and honokiol were found in only one-fifth quantities in comparison to their concentration in the aggregate of Magnolia bark.



Single seed of magnolia follicles

BENEFIT OF MAGNOLIA FLOWER

1. Magnolia is used for weight loss, problems with digestion, constipation, inflammation, anxiety, stress, depression, fever, headache, stroke, and asthma.
2. Flower bud is used for stuffy nose, runny nose, common cold, sinus pain, hay fever, headache, and facial dark spots. Some people apply magnolia flower bud directly to the gums for toothaches.
3. Flower bud extract is used as a skin whitener and to minimize or counteract skin irritation caused by the other ingredients.
4. Magnolia flower oil are used to decrease anxiety and nervous tension and to improve sleep.

CONCLUSION

In the United States, the Magnolia tree symbolizes luck and stability and victortorial embody dignity and pride. It's a staple in Southern gardens and delights people with its flowers in the early to mid-spring. In the east, the white blooms of the magnolia represent nobility and purity, while many of its parts are used in traditional folk medicine. Magnolias are believed to be the earliest known flowering plants, with their fossils dating back over 100 million years. Magnolia trees even existed before bees, so they rely on beetles for pollination. Instead of nectar, the flowers produce large quantities of pollen that the beetles use for food. People use the bark and flower buds to make medicine. Some researchers believe honokiol, a chemical in magnolia bark, is what makes these medicines work. Magnolias also symbolize beauty, purity, love, and joy depending on the colour.

