

Magnolia in Perfumery

By Danute Pajaujis Anonis, Consulting Chemist Perfumer
Rego Park, New York

Magnolia was named after the 17th century French botanist, Pierre Magnol. Magnolia flower oil is not produced commercially. Synthetic magnolia compounds and specialties are used in perfumery.

Botanical Origin

Magnolia macrophylla, grandiflora and other varieties originated in China and India.¹ *Magnolia grandiflora* L. (fam. Magnoliaceae) is also probably native to the south of North America, possibly South Carolina). It was introduced into Southern France and Italy at the end of the eighteenth century.²

Mode of Production, Type of Oil, Yield

Extraction of magnolia flowers with volatile solvents (petroleum ether) yielded from 1.2 to 1.63% of a greenish-yellow concrete. By steam distillation of the concrete, two semi-solid oils were obtained; the yields were 9.57 and 10.1%, respectively. The odor of both oils was characteristic of the odor of magnolia flowers.³

In another study, steam distillation of Italian magnolia leaves yielded 0.1 to 0.15% of a volatile oil. It had a very pleasant odor, and upon exposure to air the oil became viscous.⁴

Chemical Composition

There is no data known to this author regarding the chemical composition of magnolia flower oil.

A study of a steam distilled magnolia leaf oil in the beginning of this century revealed the following compounds:⁵

phenols	about 3%
carbonyl compounds	about 4%
cineole	

A mixture of probably sesquiterpenes and oxygenated compounds of unknown structure in the fraction b. 230°-265°.

Synthetic Compounds

From the olfactory point of view, magnolia is linked to orange flower and lily of the valley.

The base of conventional magnolia compounds consists of hydroxycitronellal combined with the citrus oils of bergamot, lemon, lime, mandarin and orange, neroli, rose and lily of the valley or their components. Jasmin or its components may be added to enhance the floral note. Violet or ionones may be used in smaller amounts, especially in soap compounds. Citronella oil and citral also have been used in magnolia soap compounds.

Of the absolutes, jasmin, orange flower, rose, tuberose, verbena and violet leaf may be part of more expensive magnolia compounds.

Among fixatives of natural origin, orris concrete, balsam Tolu, civet absolute, musk Tonquin, resinoid Tonka absolute and resinoid vanillin have been used.

Among other fixatives, cinnamyl formate, coumarin, musk ketone, musk ambrette, heliotropin, isobutyl benzoate, methyl salicylate, vanillin, synthetic civet and musk compounds may be mentioned.

Formulas 1 and 2 are provided as examples of conventional illustrative magnolia compound formulas. Examples of conventional illustrative soap perfume formulas are given in Formulas 3, 4 and 5.

Some earlier magnolia compounds contained ethyl cyclocitralidene acetate (known as Resedone), dimethyl benzyl carbinol combined with methyl hexyl acetaldehyde, small amounts of undecalactone and aldehyde C-16 combined with Tonkarome, all of which imparted a unique cachet. Other magnolia variations were built on sandalwood-cedarwood type compounds, toned with a rose bouquet, as exemplified by Magnolia (Chanel).¹⁰

Magnolia specialties known by the name of Magnolys, have been developed. In general, a green note consisting of styrallyl acetate or phenyl acetaldehyde, and fruity-aldehydic notes, i.e. phenyl ethyl isobutyrate, aldehyde C-14 (undecalactone) or aldehyde C-16 were added to the basic magnolia compound. Some specialties contained dimethyl

Magnolia in Perfumery

benzyl carbinyl acetate, phenyl ethyl dimethyl carbinol and phenyl ethyl acetate. Cinnamic alcohol was used in varying amounts along with isoeugenol, and aldehyde C-18 was added in small amounts. Other variations contained indole.

In developing more modern magnolia compounds, the perfumer would have to replace dermatologically unacceptable perfume materials, or use some of them in limited amounts, specially processed or in conjunction with quenchers. Such materials are listed in Table I.

In addition, some formerly used perfume materials became too expensive or are no longer available. New aromatic chemicals provide the perfumer with an opportunity to modernize magnolia compounds.

Hydroxycitronellal can be replaced with Lilial or Lyril, and the newer Dupical (Naarden), Oncidal (Dragoco) and Mayol (Firmenich) contribute to the muguet odor.

Other aromatics with floral notes are: ocimene and dihydromyrcenol, the latter with a floral-lime odor; methyl dihydrojasmonate (Hedione, Firmenich), jasmolactone, pentyl cyclopentanone (Delphone, Firmenich), hexenyl cyclopentanone (Hasmigone, Bedoukian), and p-tertiary butyl cyclohexanol are useful in jasmine; rose oxide and β -damascenone are valuable in rose. 2,6-Nonadienal, 2,6-nonadienol, cis-hexenyl heptene carbonate and cis-hexenyl methyl carbonate (Liffarome, IFF) are in the violet leaf and violet odor tonalities. Dodecadien-4-olid, known as Tubero lactone is a useful tuberose component.

Nitriles, pyrazine and furan derivatives are among newer aromatics in perfumery. Geranyl nitrile (Citrava, IFF), nonyl nitrile, α -sinensal, trans-2-decenal, trans-2-dodecenal, 2,6-dodecadienal and trimethyl decadienal (Trimenal, Firmenich) are the newer citrus and citrus-aldehyde notes, the last-named having a more complex citrus, floral and powdery odor.

Cedroxide (Firmenich), octahydro tetramethyl naphthalene (Iso E Super, IFF), hydroxy tridecyl tricyclo tridecane (Sandela, Givaudan), methyl cedryl ketone (Vertofix, IFF) and p-tertiary butyl cyclohexyl acetate are in the woody,

powdery odor group.

Among fixatives are: cis-hexenyl benzoate and -salicylate, 3-oxa-10-ethylidene-tricyclo (6,2,1,0) undecan-4-one (Florex, Firmenich).

It is interesting to note that during purely academic research work related to jasmine a new cyclopentanone derivative, i.e. 3-acetonyl-2-pentyl-1-cyclopentanone was found to have a strong magnolia odor and good fixative properties.¹¹

Formula 1. Magnolia Base No. 98⁶

	Parts
Bergamot	220.0
Lime W.I.	110.0
Lemon 1	10.0
Hydroxycitronellal 1	46.0
Nerolidol	22.0
Petitgrain	13.5
Linalool	43.0
Linalyl acetate	10.5
Dimethyl anthranilate	19.0
Rose synthetic	75.0
Ylang ylang	48.0
Jasmin aldehyde	45.0
Benzyl acetate	39.0
α -Ionone	6.0
Isobutyl benzoate	12.0
Ethyl laurate	4.5
Cinnamyl formate	6.0
Methyl heptene carbonate	22.0
Farnesol 1	0.0
Musk ambrette	9.0
Resinoid tolu	5.0
Civet synthetic	2.5
Indole	2.0
	<hr/>
	1000.0

Formula 2. Magnolia⁷

	Parts
Ylang ylang	25
Linalool	150
Tuberose absolute	45
Neroli bigarade	65
Orange flower absolute	65
Bergamot	90
Hydroxycitronellal	110
Heliotropin	10
Vanillin	35
Jasmin absolute	20
Rose Otto	20
Benzyl acetate	50
Musk ketone	65
Orris concrete j	5
Lemon oil	220
Musk Tonkin 10%	45
Civet absolute	50
Resinoid Tonka	5
Resinoid vanilla	5
Mandarin oil	20
	<hr/>
	1000

Formula 3. Magnolia No. 526⁸

	Parts
Bergamot	155
Hydroxycitronellal for soap	204
Terpineol	161
Citra	150
Rose synthetic	105
Jasmin synthetic	95
Cananga	150
Ionone soap	35
Tolu balsam	25
Musk ambrette	20
	<hr/>
	1000

Formula 4. Magnolia No. 527⁹

	Parts
Hydroxycitronellal for soap	200
Petitgrain Paraguay	250
Geraniol	300
Cananga Java	200
Tolu resinoid	25
Moskene LG	25
	<hr/>
	1000

Formula 5. Magnolia Soap No. 3

	Parts
Geraniol	300
Heliotropin	150
Terpineol	100
Cananga	95
Terpinyl acetate	90
Benzyl acetate	85
Cinnamic alcohol	50
α -Amyl cinnamic aldehyde	40
Linalool	40
Ionone residue	40
Citronella Java	40
Lemongrass	35
Musk xylol	25
Citral	10
	<hr/>
	1100

Magnolia in Perfumery

Table I. Perfume materials unacceptable dermatologically for magnolia compounds

	Specially processed	Used with quenchers	Limited percentage
Bergamot	+		2.0%*
Cinnamic alcohol			4.0
Citral		+	
Dimethyl anthranilate			50.0*
Farnesol	96% pure		
Hydroxy-citronellal			7.5
Ionones and derivatives	of high purity		
Lemon c.p.			10.0*
Lime expressed			3.5*
Methyl heptine carbonate			eliminated
Musk ambrette			4.0 (1.0**)

* For applications on areas of skin exposed to sun
 ** In fragrance compounds for toilet water, cologne, shaving products and sunscreens

Application

Magnolia has been used as a single flower perfume, the most famous of which was perhaps Magnolia Chanel. But such fragrances have lost their appeal.

Magnolia compounds also have been utilized to perfume lotions, creams and soaps. In regard to soap, today's traditional soaps include magnolia fragrances (Caswell-Massey).

Magnolia also may serve as a component of other floral compounds, i.e. violet.

Magnolia specialties have played an important role in heavier floral perfumes. An example is White Shoulders.

Presently, magnolia compounds are mostly used as components of other fragrances. *Mystère* and *Cabriole* may serve as examples.

References

Address correspondence to Danute Pajaujis Anonis, Consulting Chemist Perfumer, 98-41 64th Road, Rego Park NY 11374 USA

1. O Gerhardt, *Das Komponieren in der Parfuemerie*, Leipzig: Akademische Verlagsgesellschaft MBH (1931) p 90
2. E Guenther, *The Essential Oils*, Vol 5, New York: D Van Nostrand Company, Inc (1952) p 382
3. Igolen, *Rev Marques Perfums*, France **16** 33 (1938)
4. Tommasi, *Rivista Ital Essenze Profumi* **10** 156 (1928)
5. Ibid
6. Gerhardt, 90
7. P Jellinek, *Das Praktikum des Modernen Parfuemeurs*, Wien: Urban & Swarzenberg (1949) p 71
8. Gerhardt, 276
9. Ibid
10. Ibid, 91
11. H Kuhlmann and H Stetter, *Proceedings of the Second International Haarmann & Reimer Symposium on Fragrance and Flavor Substances*, September 24-25, New York City, 108 (1979)

