

# Atypical Jasmines in Perfumery

Why aren't more jasmine types—with their potential to impart new and extraordinarily creative accords to fragrances (and even flavors)—being used in the industry?

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Never in the history of perfumery has a flower or family of flowers been as important to the perfumer as jasmine. For centuries, women in the Far East have worn the flowers—mainly of *Jasminum sambac*, *Jasminum flexile* and *Jasminum auriculatum*—to adorn their hair, necks, wrists and ankles, imparting a grace, refinement, charm and magical scent. Today, we see a trend in so-called fine toiletries to use the name of the flowers. However, when thinking of jasmine as a fragrance ingredient, perfumers tend to consider only *Jasminum grandiflorum* or *J. sambac*, while inexplicably ignoring the other species of this family.

Jasmines (sometimes referred to as *jessamines*) belong to the genus *Jasminum* of the olive family (Oleaceae). This plant family contains hundreds of tropical and subtropical varieties of fragrant, flowering and woody shrubs—many of which are yet to be explored by the perfume industry. Meanwhile, numerous fragrant flowered plants from other families—despite not literally belonging to the family—are referred to as jasmines: star, or confederate jasmine (*Trachelospermum jasminoides*), cape jasmine (*Gardenia jasminoides*), Madagascar jasmine (*Stephanotis floribunda*), jasmine tobacco (*Nicotiana alata*), Carolina jasmine (*Gelsemium sempervirens*), Chilean jasmine (*Mandevilla suaveolens*), orange jasmine (species of the genus *Murraya*), night or day jasmine (genus of *Cestrum*) and the non-fragrant pandorea jasmine (*Pandorea jasminoides*). All but the last of these are extremely effective in fragrances. If so, why aren't more jasmine types—with their potential to impart new and extraordinarily creative accords to fragrances (and even flavors)—being used in the perfume industry?

## Commonly Used Jasmines

The common jasmine—or poet's jasmine (*J. grandiflorum*)—plant is native to many countries, including Spain, France, India, Egypt, Greece, Turkey, Italy, Morocco, Iran and



several southern Mediterranean countries. It has fragrant white flowers that are the source of jasmine absolute, which is most commonly used in perfumery—either in its natural form or otherwise. While the effects of *J. grandiflorum* are many and widely known, jasmine as a plant family is not restricted to this species alone.

*Jasminum auriculatum* blends well with oriental fragrances, imparting a scent that mixes extraordinarily well with osmathus absolute, orris absolute and Indian rose oil.

The best varieties of jasmine that this author uses for perfumery are *J. grandiflorum* and *J. sambac*. While the latter is a relatively recent addition to Western perfumery, it has been used in India for centuries, either as an absolute or attar (also called *motia*). Originally, attars were prepared by co-distillation of jasmine with natural sandalwood oil. Today, however, it is co-distilled either in synthetic sandalwood bases or in dioctyl phthalate (DOP). In addition, dried *J. sambac* flowers are used to make jasmine tea in the Arabian Peninsula, India, Thailand, Cambodia, Laos, Myanmar, Vietnam and the Philippines.

## Atypical Jasmines

Three jasmine varieties not yet widely used in perfumery are: *J. auriculatum*, *J. sambac* sepale (English: *sepal*) and *J. flexile*.

***Jasminum auriculatum*:** The yield from the white flowers of *J. auriculatum* varies from 0.2–0.4%, depending on the nature, time and place of their extraction. *Jasminum auriculatum*—often referred to as *chameli*,

*vasane mallige, juhi, hadagali mallige* or *mogra*—blends well with oriental fragrances, imparting a scent that mixes extraordinarily well with osmathus absolute, orris absolute and Indian rose oil. Likewise, adding *J. auriculatum*, osmanthus absolute, orris absolute, Indian rose oil and agarwood oils to vanilla, benzoin, opoponax, myrrh, ambregris accords, tolu oil colorless DM, mulacro oil, benzyl phenylacetate, ambroxan, styrax absolute, saffron attar, cinnamyl phenylacetate or phenylethyl phenylacetate create beautiful accords. These accords change drastically when *J. auriculatum* absolute is replaced by *J. grandiflorum*. *Jasminum auriculatum*<sup>a</sup> is one of my preferred absolutes because it is the one that best blends with oriental fragrances, imparting an indescribable scent that blends extraordinarily well with osmathus absolute, orris absolute, and Indian rose oil. This latter material may be the best of the rose oils. It is not distilled from *Rosa damascena*, but from *Rosa bourboniana*. It has been used to create mysterious and mythical accords with several agarwood oils: Manipuri Agarwood Oil 10491-4/D, Bhutan agarwood oil 10956/D, Arunachal Pradesh agarwood oil 10955/D (a delicately more smoky, but extremely long-lasting quality) and West Tibet agarwood oil 10958/D (a product imparting a royal quality with moving effects). Those natural essential oils (ex *Aquilaria agallocha*) are standardized products of extremely high quality that have been just slightly stabilized in order to avoid crystallization of their many naturally occurring acids. In addition to these accords, *J. auriculatum*, osmanthus absolute, orris absolute, Indian rose oil and agarwood oils, when mixed with vanillas, benzoin, opoponax, myrrh, ambregris accords, tolu oil colorless MD, mulacro oil, benzyl phenylacetate, styrax absolute, and saffron attar, create unbelievable accords. Just by replacing *J. grandiflorum* with *J. auriculatum* absolute one is able to smell the accords like night and day. This author uses more and more *J. auriculatum* in his oriental fragrances, thus making them unique and almost impossible to copy.

Replacing *Jasminum grandiflorum* absolute with *Jasminum flexile* absolute could open doors to totally new accords.

***Jasminum sambac*:** This variety is the national flower of the Philippines and Indonesia. In Indonesia, according to the *New World Encyclopedia*, the flower symbolizes purity, eternal love, nobility and female beauty. In Hawaii and South India, the flowers are used to make fragrant leis or are worn in the hair. It is known by a number of names around the world, including pikaki (Hawaii), mogra (Hindi), kampupot, melati (Malaysia and Indonesia), sampaguita (Tagalog) and mallipu (Tamil). *Jasminum sambac* plays a large part in the spiritual and cultural lives of numerous nations. In South India, for instance, jasmines are strung into thick strands and worn as a hair adornment, while dried flowers—particularly those of *J. sambac*—are used to produce jasmine tea. This product often has green tea, and sometimes oolong, as its base. In China, jasmine flower tea is also consumed.

<sup>a</sup>Auram produces this absolute exclusively for its own internal use.

Jasmine *sambac* absolute is a green and indolic extract, the chemical composition of which differs largely from *J. grandiflorum*. This absolute contains methyl oleate (8–10%), *cis*-3-hexenyl acetate (2%), small quantities of *cis*-3-hexenol, *trans*-2-hexenyl acetate, *cis*-3-hexenyl butyrate, *trans*-2-hexenol, hexyl acetate, several pyrazines and almost 5.5% of *cis*-3-hexenyl benzoate (which enhances the greenness of the acetate). Moreover, it contains only around 13.5% of benzyl acetate, compared to 30% in *J. grandiflorum*. Jasmine *sambac* absolute generally contains the same level of pure indole as that of *J. grandiflorum*, though it sometimes contains levels that are as much as 10 times higher (13–16%).

Jasmine *sambac* absolute also contains *cis*-jasmone—but in lesser quantities than *J. grandiflorum*—several acids (linoleic, linolenic, oleic, etc.), *p*-cresol, and a surprisingly large amount of benzyl cyanide—around 0.35%. Jasmine *sambac* absolute contains large quantities

of farnesenes—mainly  $\alpha$ -farnesene—along with many other sesquiterpene hydrocarbons, methyl anthranilate, a very “sensitive” (-)-germacra-1,6-dien-5-ol, (+)-(Z)-3,4-epoxyhexenyl acetate and benzoate. Geranyl linalool is also present in *J. sambac* absolute 10596/D. The mixture of natural or well-reconstituted absolute with sandalwood oil and sandalwood chemicals imparts extraordinary effects; the accords are equally impressive when *J. sambac* absolute is combined with Javanol, hindianol (in combination with Javanol and Firsantol), Ebanol, Firsantol, ethyl laitone DA (not to be confused with methyl laitone), Fleursandol or Polysantol.<sup>b</sup> Excellent perfumes can be created using even just 10% of *J. sambac* absolute, or its scientific reconstruction, Jasmine Sampac Absolute 10596/D, when the sandalwood oil or sandalwood chemicals are balanced as previously described. According to my experience, Firsantol and hindianol are best; an attar codistilling *J. sambac* flowers with Firsantol, hindianol,

nirvanol and Sandalwood 10698/D with traces of mysoral and Fleursandol would be wonderful.<sup>c</sup> The same thing can be done with Javanol, though mysoral would no longer be necessary since Firsantol is fruitier than Javanol. However, while Javanol itself does not require mysoral, it may need a bit of Fleursandol. While *J. sambac* notes are used in minute amounts, their beauty is unsurpassable with the sandalwood notes described above, exemplified in Sandalwood 10698/D, the extremely powerful Sandalauram 10262/D and the masterpiece of sandal harmony, Sandalwood 10646-3/D.

In addition, extraordinary accords can be created with natural *J. sambac* or Jasmine Sambac 10596/D combined with big amounts of Habanolide, Serenolive, laevo-Musccone, Helvetolide, sandalwood chemicals and, in the case of *J. auriculatum*, vanilla notes accorded with lots of heliotropine, dextro nor limbanol, nor limbanol, Ambrocenide, cedroxide, Amber Xtreme, firascone, Trisamber, boisanol, amber ketal

<sup>b</sup>Javanol is a trademark of Givaudan; Firsantol is a trademark of Firmenich; Ebanol is a trademark of Givaudan; Fleursandol is a trademark of Symrise; Polysantol is a trademark of Firmenich.

<sup>c</sup> Fleursandol is a trademark of Symrise.

and Trimofix.<sup>d</sup> These accords are supreme when florized with Lyril, 2,3-laevodihydrofarnesol and Phenoxanol.<sup>e</sup>

Simple accords of *J. sambac* absolute with methyl epi-jasmonate, Paradisone and laevo-muscone, with touches of a fruity Sichuan pepper absolute, cassis bud absolute or curry leaf absolute with hints of labienoxime, isospirene or neocaspirene are extraordinary.<sup>f</sup> In this case, however, the use of *J. sambac* sepale or, especially, the bright and

<sup>d</sup>Habanolide is a trademark of Firmenich; Serenolide is a trademark of Givaudan; Helvetolide is a trademark of Firmenich; Ambrocenide is a trademark of Symrise; Trisamber and Trimofix are trademarks of IFF.

<sup>e</sup>Lyril and Phenoxanol are trademarks of IFF.

<sup>f</sup>Paradisone is a trademark of Firmenich.

amazing *J. flexile* (*nittymallige*; the best of all the jasmines this author uses) are better.

A particular *Jasminum sambac* “sepale” absolute, a specialty of a French company from Grasse, is an extraordinarily creative product.<sup>g</sup> Its production process is said to remove the indolic aspect of typical *J. sambac* absolute, while retaining just the green and slightly fruity and floral notes. A deeper study of this absolute shows it to be an excellent substitute to *J. sambac* absolute in almost all accords. For this author, *J. flexile* absolute ranks first for Western and crystalline perfumery accords, followed by *J. sambac* “sepale” and *J. auriculatum*, which is also the second best for oriental perfumery.

***Jasminum flexile:*** *Jasminum flexile*, also known as *nittymallige*, is a creeper plant widely planted in home gardens for its scented flowers, which it bears throughout the year, though they only appear in abundance during winter and early spring. The smell of *J. flexile* is extremely soft, floral, clean and delicate, possessing delightful notes of Night Queen absolute (*Sele-nicereus grandiflorus*), champaca absolute, cassis absolute, frangipani absolute, tiare absolute (Tahitian gardenia) and tuberose. *Jasminum flexile* absolute creates beautiful accords with methyl jasmonate, methyl epi-jasmonate, Paradisone, mimosa absolute, Hedione, cedrat oil, yuzu oil, isospirene, oxane and other great sulfur chemicals such as 3-thiohexyl acetate and isovalerate, passiflora acetate, myrrhone and laevo-muscone.

**Composition variations:** It should be noted that the chemical composition of *J. flexile*, *J. auriculatum* and *J. sambac* differ significantly from the composition of *J. grandiflorum* absolute. Analysis of *J. flexile* absolute revealed benzyl salicylate as one of the main ingredients, along with ethyl linoleate, linolenate, oleate, elaidate (methyl *cis*-13-octadecenoate), palmitate, palmitoleate, stearate, the corresponding acids, (E),(E)-farnesol, (E),(E)-farnesyl acetate, benzyl benzoate, *cis*-3-hexenyl benzoate, cinnamic alcohol, isoeugenol 1-nitro-2-phenylethane (C<sub>8</sub>H<sub>9</sub>NO<sub>2</sub>; MW 151.06), methyl salicylate, benzyl alcohol, p-cresol, benzyl acetate, β-hydroxypropionaldehyde diethylacetal (C<sub>9</sub>H<sub>20</sub>O<sub>3</sub>; MW 176.14), methyl benzoate, phenylethyl alcohol,

<sup>g</sup>The author has chosen not to name the source of this particular material.

linalool, indol, benzaldehyde, *cis*-jasmone, *cis*-3-hexenol and (E)- $\beta$ -farnesene, and more.

However, after benzyl salicylate, this author found two peaks with ions 91—just as with benzyl salicylate—but with MW 244; one of them was extremely small but perfectly ionized, while the other was present in a considerable quantity. Since benzyl salicylate is C<sub>14</sub>H<sub>12</sub>O<sub>3</sub>, this author believes that the molecular formula would be C<sub>14</sub>H<sub>12</sub>O<sub>4</sub>, the exact MW of which is 244.07. In addition, having smelled this much brighter component through a GC, the author deduced that benzyl salicylate undergoes enzymatic hydroxylation on one of the aromatic rings marked A or B to give one of two possible products (actually, both could be formed in very different ratios). However, where exactly the hydroxyl attacks the nuclear position is difficult to tell. Nevertheless, by looking at the fragmentation pattern, a simple benzyl fragment (m/e = 91.05) could be observed, meaning the molecule was benzyl 2,5-dihydroxybenzoate (the biggest peak), or a hydroxybenzyl fragment (m/e 107.5), meaning the molecule was 2-hydroxybenzyl 2-hydroxybenzoate. This author has yet to synthesize these two chemicals, but is certain that these are the key elements in the *nittymallige* absolute, which imparts a fresh, oily and metallic odor several days after dipping it on a smelling strip.

This shows that replacing *J. grandiflorum* absolute with *J. flexile* absolute could open doors to totally new accords. For instance, by making a *Chanel N°5* (Chanel) or a *Joy* (Jean Patou) with two jasmynes, one could sense the rich nuances of *J. flexile*.

## ***Jasminum flexile* Compositions**

*Jasminum flexile* absolute can be enhanced not only by methyl epi-jasmonate and Paradisone, but can also give wonderful effects if combined with extremely clean musks such as laevo-muscone, ambrettone, Aurelione and hexadecanolide. The same is true when small quantities of Muscenone, Exaltenone and, to a lesser extent, Cosmone, are added to give warmth and body.<sup>h</sup> (Although Cosmone and muscenone are both great chemicals that impart body and a strong nitromusk nuance, this author personally prefers muscenone.) Other great accords of *nittymallige* absolute include the previously mentioned methyl epi-jasmonate—a chemical that is a thousand times better than regular methyl jasmonate—Paradisone, laevo-muscone, 2,3-laevo-dihydrofarnesol, gardenia 10808-3/D, magnolia *grandiflorum* 10614/D and phenylacetaldehyde oxime methyl ether. These accords, with touches of natural farnesene and bisabolene ex lemon, are totally unique, and set a trend for the future, because of their exquisiteness, delicacy, elegance and diffusion. These accords are not unique, but when blended with aquatic chemicals like Calone, Aldolone or Transluzone and the revolutionary dihydro- $\alpha$ -vetivone and some sweetie oil, all of it harmonized by firascone, one creates something unique with an extremely rich, floral, musky, radiant citrus, light woody explosion that is very homophonic and long-lasting.<sup>i</sup> Auram's Tiare 22776/D, with Paradisone, firascone, Tranzluzone, dihydro- $\alpha$ -vetivone, dihydro nootkatone, Hedione, Muscenone, laevo muscone and Nebulone, and a noticeable shade of *J. flexile* absolute results in an extremely beautiful fragrance that is entirely new, containing unbelievable floral, citrus, musky and woody diffusion.<sup>j</sup>

## **Other Jasmynes for the Future**

There are several additional jasmynes worth considering, including winter jasmine (*Jasminum nudiflorum*), a Chinese species with solitary yellow flowers that is mainly used as a cover plant on hillsides; primrose jasmine (*Jasminum mesnyi*), which is a similar plant with larger flowers that bloom during the winter; and Italian jasmine (*Jasminum humile*), a vinelike shrub with yellow flowers that has many cultivated varieties. To date, although this author has been using these jasmine species to make absolutes, their usage has been restricted to tentative internal tests.

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<sup>h</sup> Cosmone is a trademark of Givaudan; Aurelione is a trademark of Symrise; Vulcanolide is a trademark of Firmenich; both Vulcanolide and vulcano nitrile can be used to enhance the metallic notes of Aurelione and Cosmone; Exaltenone and Muscenone are trademarks of Firmenich.

<sup>i</sup> Calone was originally discovered by Pfizer; Aldolone is a trademark of Firmenich; Transluzone is a trademark of Firmenich.

<sup>j</sup> Hedione is a trademark of Firmenich; Nebulone is a trademark of IFF.