



# Flavor Bites: Methyl Jasmonate

Potential application areas in flavor formulations—  
mint, floral, berry, tea and more

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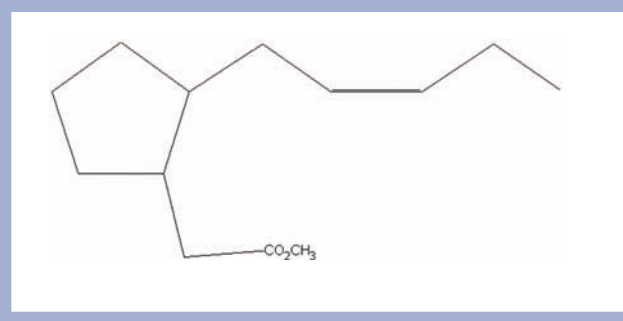


We all have a few favorite ingredients. One sure sign of a favorite ingredient is when another flavorist remarks archly that perhaps you have used too much of it in a particular flavor, “yet again.” Of course, flavorists’ egos are not so easily dented and mine is no exception, so I leave the ingredient and the level completely unchanged, and the customer loves it anyway.

Methyl jasmonate (FEMA#3410; see **F-1**) is high up on my list of favorite ingredients. The material is found in nature, most notably in lemon, mint and tea. It is also an important natural component of jasmine absolute and boronia absolute. Methyl jasmonate can be used for good effect in a wide variety of flavors. It is highly characteristic and versatile and, most importantly, very flexible with respect to its use level. It represents a very soft, true, jasmine character with few, if any, secondary notes. In this respect, it is preferable in most applications to methyl dihydrojasmonate (Hedione, Firmenich), which has a slight tea nuance. Moreover, it is much better than any of the other jasmine odorants, such as hexyl cinnamic aldehyde. It is very stable, yet highly diffusive. But surprisingly, despite these advantages it is the least used jasmine odorant in flavors.

Methyl jasmonate

**F-1**



Methyl jasmonate contains a number of isomers, of which (+)-methyl epijasmonate is the main odorant. Some advantage may be gained from commercial products containing higher levels of this isomer, but it is important to remember that the isomer ratio may change in finished

foods. As such, storage trials are a good reality check, especially in aqueous end products.

To keep things simple, my suggested use levels are in parts per million of a flavor that is then dosed at 0.05% in a ready-to-drink beverage or broth. For example, a level of 1,000 ppm in the flavor would equate to a level of 0.5 ppm in a ready-to-drink beverage.

## Applications: From Basic to Novel

The most obvious use of methyl jasmonate is in jasmine flavors. Methyl jasmonate is present in jasmine flowers at around 4 ppm. Around 1,000 ppm has the effect of transforming a mundane flower flavor into a true floral bouquet. It also enables a flavorist to incorporate higher levels of benzyl acetate in the flavor without making the character seem artificial. One highly novel concept might be to use methyl jasmonate itself (at say, 0.2 ppm) in cooking. Perhaps a combination with duck and fresh ginger would be interesting; that dish would truly merit the often used description “molecular cuisine.”

Sadly, jasmine flavors only command a limited market share and we need to seek out some more mainstream uses. Lemon flavors benefit tremendously from methyl jasmonate. A level of 20 ppm gives realism to a peel oil type flavor, 500 ppm gives a realistic fresh lemon juice

## A Note from the Author

Over the years we all gather knowledge. The greatest reward, however, is to be able to pass on that knowledge to the next wave of flavorists. I have been doubly fortunate to share some of it in the form of a book, *Flavor Creation* (Allured Business Media, 2004). Through this column, I hope to continue the process, initially looking at favorite ingredients and then specific countries in detail. Reader feedback and ideas are always welcome and encouraged, as they will help make this column successful and relevant.

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effect and levels as high as 2,000 ppm give a strong old-fashioned lemonade effect. This enormous range of use levels is only possible because of the lack of secondary notes. However, care should be exercised with very high levels because the effect can become somewhat deadening. Methyl jasmonate has the additional benefit in beverage flavors of being much more stable than citral, imparting a pleasant residual character to beverages nearing the end of their shelf life. Other citrus flavors can also benefit, to a lesser extent, from small additions of methyl jasmonate. One can try using 20 ppm in orange juice flavors, especially those containing significant levels of ionones. Also, 50 ppm can be good in lime flavors, though less so in those based on distilled lime oil. Additions around 20 ppm, and even up to 100 ppm, can make mundane grapefruit juice flavors very special.

Methyl jasmonate exhibits a similar degree of flexibility in strawberry flavors. Levels around 10 ppm lift and add realism to fresh strawberry flavors, but levels as high as 200 ppm can be used to give the effect of those tiny, supremely tasty wild strawberries you can buy at farmers' markets in France. Again, it is difficult to overdose, especially if the flavor contains significant levels of sulfur notes. Other berry flavors can also use methyl jasmonate. In fact, 30 ppm brightens blackcurrant flavors and adds realism, while more subtle levels, around 10 ppm, can be very attractive in raspberry, blackberry and blueberry flavors.

All tea flavors should contain a significant quantity of methyl jasmonate. While the effect is most obvious in black tea flavors, fragrant flavors can use around 100 ppm. Green and red teas can accommodate around 50 ppm to good effect. Mint flavors can use levels up to 200 ppm.

Peach flavors, like strawberry flavors, derive an important part of their character from  $\gamma$ -decalactone and related lactones. The affinity between these lactone notes and methyl jasmonate makes additions of this chemical at around 50 ppm very attractive. Similarly, apricot flavors, particularly dried apricots, can benefit from around 100 ppm. The same logic applies to guava flavors at around 50 ppm and mango flavors at around 100 ppm.

This covers all the most obvious flavors, but that should not deter an enthusiastic flavorist. There are other less obvious flavors where methyl jasmonate might also be used successfully. We don't want our flavors to be boring,

## About the Author

John Wright is an independent consultant and author who worked as a flavorist for more than 30 years, initially with Duckworths and PFW in the United Kingdom, and then with Bush Boake Allen in Canada, the United Kingdom and the United States, before joining IFF's US operation. He progressed into technical and general management, but has always adamantly retained an active creative role in flavors. Wright is a fellow member of the Royal Society of Chemistry and the British Society of Flavourists, and a member of the Society of Flavor Chemists.

so here's a few oddball suggestions. Butter may seem an unusual suggestion, but try the addition of 200 ppm of methyl jasmonate. It brightens the flavor and gives a more natural character, especially if the secondary notes are cooked—perhaps it works because of the lactones. In addition, this level adds life to even the most mundane banana flavor. A more significant amount, around 500 ppm, can be added to rhubarb and melon flavors. Grape flavors benefit from a more modest addition, say around 10 ppm.

And moving into even stranger territory, one can try using 200 ppm in chocolate flavors, 1 ppm in hazelnut flavors and 2 ppm in fatty beef flavors.

I'm sure this does not exhaust all possible eccentric uses. I welcome any and all ideas. Send your suggestions to [johnwrightflavorist@gmail.com](mailto:johnwrightflavorist@gmail.com) and we will publish the most original (or crazy) in this column.

*Next month: John Wright explores the ins and outs of servicing the German market.*