



Ω-Pentadecalactone

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Flavors and fragrances exhibit a great many similarities, both in respect to the way they are created and in many of their ingredients. Despite these similarities, there are a few points of difference. One of the biggest is the fact that flavor chemists are more closely tied to nature, i.e., re-creating hints of known flavors, and less free to indulge in pure fantasy as perfumers do.

One of the most obvious effects of the greater freedom in perfumery is the dominant role played by musk chemicals in fragrances. The exotic and sensuous character of musk is highly attractive, and there are very few fragrances where it does not play an important part. Flavorists, guided by nature, tend to see musk as a peripheral ingredient at best. It may be seen as essential in blackberry and liqueur flavors, but in little else.

Perhaps flavorists should take a leaf from the perfumers' creative book and look at a wider range of possible uses for this intriguing and uniquely attractive note.

Ω- (FEMA #2840, CAS# 106-02-5) is, in this author's opinion, the most effective musk in flavor compositions by far. The FEMA name Ω-, however, is rarely used; this chemical is much better known by a number of trade names—most commonly Exaltolide^a.

It is found sparsely in nature, principally in angelica, but has an extremely pure musk odor. This can be a disadvantage at high levels in fragrances due to scent adaptation, but at the low levels used in flavors it is a distinct advantage. While musks are base notes in fragrances, they can serve to brighten and enhance flavors, often adding a subtly sensuous nuance.

^aExaltolide is a registered trademark of Firmenich SA.



Berry Flavors

Blackberry: The most obvious use of musk is in blackberry flavors. This is probably the only flavor category where a musk note is mandatory to achieve flavor recognition. A 500-ppm level of Ω- in blackberry flavor is reasonable to achieve the familiar commercial fruit character. In this author's opinion, it is also worth experimenting with much higher levels—up to 3,000 ppm—to reproduce the vastly superior character of fully ripened wild blackberries.

Blueberry: After blackberry, blueberry flavors are the next obvious choice for musk notes. Musk enhances and brightens the key floral lavender notes and adds considerably to the overall character. A 100-ppm level of Ω- is a good starting point in blueberry flavors. Double this level can also be used for good effects in the closely related but much more flavorful bilberry (or wild blueberry) flavor category.

Raspberry: Raspberry flavors, unlike blackberry, are not obviously musky in character but they do benefit greatly from a subtle addition of musk notes, which lift and brighten their profile and subtly increase the impression of ripeness. Ideal levels vary, depending especially on the level of violet notes, but 20 ppm of this ingredient is a reasonable initial level in raspberry flavors. Loganberry and black raspberry flavors can benefit from significantly higher levels, around 50 ppm.

Blackcurrant: Quite frankly, there is little point to adding musks to common buchu oil-based, blackcurrant flavor, tutti frutti concoctions. Ω- is only useful in authentic style flavors, and only at quite low levels of around 20 ppm. The effect at this level brightens the profile significantly and adds ripeness.

Gooseberry: Gooseberry flavors are quite subtle, and only a trace of musk character is needed to achieve the

desired profile lifting effect; 5 ppm is a good initial level for this ingredient in realistic gooseberry flavors.

Tropical Fruit Flavors

Mango: Ω - performs especially well in conjunction with the dominant terpeney mango skin character of authentic-style mango flavors, increasing the impact noticeably at levels in the region of 50 ppm.

Passionfruit: Musk is also especially helpful to enhance the catty sulfur character of passionfruit flavors. Use levels vary, depending on the level of sulfur notes, but 30 ppm is a reasonable starting point.

Guava: Much subtler levels of around 10 ppm are better in guava flavors. This level provides a subtle lifting of the flavor profile without contributing any recognizable musk character.

Papaya: A similar addition of Ω -, 10 ppm, is effective in papaya flavors, simply brightening the profile and lifting a flavor category that can often be dull.

Lychee: Lychee flavors are always a challenge for flavorists, as they too easily end up as simplistic, floral rose concoctions. At 5 ppm, Ω - only has a subtle effect, increasing complexity and lifting the profile lychee, but it does add realism.

Pomegranate: Real pomegranates have a subtle and immensely attractive flavor. All too often, however, imitation flavors fail to completely recapture that subtlety and veer off in the direction of tutti frutti. Just a touch, say 5 ppm, of Ω - can steer a pomegranate flavor back on course.

Brown Flavors

Maple: Maple flavors tend to be heavy and simplistic, far away from the lovely subtle character of genuine maple syrup. Reproducing the nuances of the natural product is a challenge but a modest level of musk note can be helpful. While this author not aware of any musk chemicals found to be present in maple syrup, the result is so natural that it is only a matter of time before one is found. Fifty ppm of Ω - is a good starting point in maple syrup flavors.

Caramel and toffee: Heaviness is also a frequent characteristic of caramel and toffee flavors. For these flavors, a modest addition of around 20 ppm of this ingredient will lift the profile and increase the initial impact.

Vanilla: Ω - works in a similar way in vanilla flavors. It is especially effective in authentic vanilla bean flavors, adding realism and brightening the profile. It also works well in more mundane vanilla flavors, lifting the profile significantly; 20 ppm is a good place to start.

Licorice: The same comments are equally true of licorice flavors, another profile where heaviness can easily be oppressive; 20 ppm of this ingredient has a pleasant brightening effect, without imposing a specifically musky character.

Tea: Finally, both black and green tea flavors can benefit from a subtle addition of this macrocyclic lactone, in the region of 10 ppm. In both cases, it adds complexity, brightening and enhancing the floral notes.