Dihydroactinidiolide

Why this subtle and versatile flavor material is perhaps worth adding to the palette

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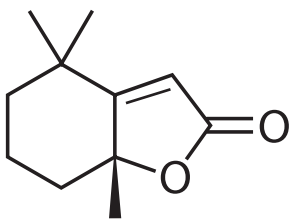
Flavor companies try desperately to keep a lid on the total number of raw materials used, which makes sense. It makes sense financially because it minimizes the amount of cash tied up in the business and reduces the amount of cash wasted in the black hole of written-off inventory. Also, from a customer service point of view, it's not cost efficient to try to deliver all finished flavors from stock. The sensible alternative is compounding to order; however, it's difficult to ensure that all of the thousands of raw materials in an "out-of-control" raw material list are in stock at any given time.

Raw material usage is a continual challenge for flavorists, so much so that most companies erect labyrinthine roadblocks to make the addition of a new raw material as difficult and tedious as possible. The best way of circumventing these roadblocks is the time-honored ruse of claiming that a major customer project can't be won without the new ingredient and that the flavor submission must be made today. Unfortunately, working on a long-term research project removes that option and the challenges have to be tackled head on.

During my long career, my most difficult raw material introduction by far was dihydroactinidiolide (FEMA# 4020, CAS# 17092-92-1; **F-1**). This ingredient has the singular misfortune of exhibiting just a very subtle aroma in its pure form. My boss at the time was an outstandingly creative and renowned flavorist, but also somewhat of a contrarian who was skeptical that this "odorless" raw material could have any useful function. Fortunately, I didn't give up and eventually I convinced him of its potential (or possibly I just wore him down). After winning such a protracted battle, it naturally became a challenge to ferret out as many areas as possible where dihydroactinidiolide could be usefully used. This raw material became a firm favorite of mine. Its subtle aroma of berries and tea is deceptive because it has a very wide range of uses, yet it also performs a subtle enhancing function separate from its own direct aroma contribution.

F-1. Dihydroactinidiolide



The dose rates provided throughout this article are the levels suggested for use in flavors that are intended to be dosed at 0.05% in a ready-to-drink beverage or in a simple bouillon.

Tea Flavors

***Green tea*:** Dihydroactinidiolide is an important component of authentic green tea flavors. Levels can vary dramatically, but 1,000 ppm in a flavor is a reasonable place to start.

***Black tea*:** The effect in black tea flavors is a little less obvious, but it still has an important contribution to make. A level of 500 ppm would be a good starting level in a flavor where black tea was the dominant profile. Less would be needed when tea is used in combination with another flavor such as lemon.

Berry Flavors

***Raspberry*:** Dihydroactinidiolide has a great effect in raspberry flavors, adding to the berry character and giving added roundness and depth of taste. Levels vary, but 300 ppm in a flavor is a good starting point.

***Blackberry*:** A very similar effect can be obtained in blackberry flavors. A level of 300 ppm is also a good place to begin experiments with this flavor category.

***Cranberry*:** The range of possible use levels is quite large, but 200 ppm in a flavor has a noticeable effect, adding depth and realism.

Strawberry: A good starting level in strawberry flavors is 200 ppm, giving an attractive extra depth of taste.

Black currant: The ideal level here

is a little lower. A level of 100 ppm will serve to enhance the character of realistic black currant flavors.

Other Fruit Flavors

***Kiwi*:** Although kiwi can be a subtle and almost fragile flavor category, it can accommodate up to 100 ppm of this raw material, which adds much needed depth.

***Passion fruit*:** Passion fruit flavors are generally far from fragile, but the top notes can tend to dominate the profile. A level of 100 ppm also works to round out this flavor category.

***Apricot*:** The best level of use of dihydroactinidiolide in non-berry fruit flavors is generally lower. A level of 20–50 ppm has an interesting effect in apricot flavors.

***Nectarine*:** Similar levels, from 20–50 ppm, also work well in nectarine flavors, adding depth, realism and a lasting taste effect.

***Cherry*:** There is little point using this ingredient in crudely fruity or almond-style cherry flavors, but it is very helpful if a more authentic style is desired at around 20 ppm.

Peach: Low levels, around 10 ppm, are effective in peach flavors. The effect is quite subtle, but it does add to the effect of realism.

***Mango*:** Similarly, 10 ppm also works well in mango flavors, subtly adding an increased level of naturalness and depth.

***Apple*:** The same is true of apple flavors. A similar level, around 10 ppm, is effective.

***Orange*:** Dihydroactinidiolide is not especially effective in peely style orange flavors; however, low levels around 5 ppm can add to the depth of taste of juicy-style flavors.

***Watermelon*:** Similarly low levels, in the region of 5 ppm, can add a subtle complexity to melon flavors, especially watermelon.

Brown Flavors

***Brown sugar*:** Moderate levels of this ingredient, in the range of 20–100 ppm, work well in brown sugar flavors, adding depth, complexity and realism of taste.

***Vanilla*:** This ingredient would be wasted in many synthetic vanilla flavors, but it can help to enhance the depth of taste and bean character of high-quality flavors. Levels vary from 10–100 ppm.

***Coffee*:** A level of 50 ppm of dihydroactinidiolide also adds depth and welcome complexity to coffee flavors.

Other Flavors

Seaweed: Seaweed flavors can tend to be very simplistic, with an over-reliance on harsh phenolic notes. Dihydroactinidiolide can be used at widely varying levels, but 200 ppm is a good starting point and it helps to round out and soften the profile.

Tomato: This ingredient, at around 100 ppm, can be used successfully in all different types of tomato flavors ranging from fresh to sun-dried.

Beer: Moderate additions, in the region of 50 ppm, are very helpful in beer flavors, rounding out the profile and adding realism.
