Theaspirane

Contrasting notes offer valuable sensory properties, but require creative finesse in applications.

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Many effective flavor chemicals possess a number of quite distinct odor characteristics. Thankfully, these are often complementary, making the ingredient relatively easy to use. A good example of this fortuitous juxtaposition is β-ionone; it has a dominant violet note and a minor, but still quite evident, cedarwood note. In many flavor types these notes are found together and clearly work in a complementary fashion.

Theaspirane, 2,6,6,10-tetramethyl-1-oxa spiro (4.5) dec-9-ene, also called Spiroxide (FEMA# 3774, CAS# 36431-72-8), has harnessed together a much less happily married combination of odor characteristics. The dominant note is fruity, berry, damson and is especially well suited to berry and tea flavors. The minor note is distinctly camphoraceous and demands much more care in use. These notes are not, on the surface at least, very complementary, but the dominant note is so interesting and valuable that it is well worth taking the trouble to find ways to use this raw material to advantage.

The dose rates given 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.

Berry Flavors

Raspberry: The damson note is extremely effective in raspberry flavors and significantly enhances the effect of ingredients such as damascenone and β-damascene. The best level of addition to raspberry flavors is 200 ppm. At this level, the damson note is optimal and the camphoraceous note merely serves to lift the overall profile.

Blackberry: The effect in blackberry and black raspberry flavors is very similar to that in raspberry flavors, but the ideal level of addition is slightly lower, around 150 ppm.

Cranberry: Theaspirane is also highly useful in cranberry flavors. The best level of addition is about 100 ppm. At this level, the ingredient adds a lovely berry note and adds lift to offset the cheesy background notes.

Blackcurrant: Blackcurrant flavors provide another example for which the unusual combination of damson/berry and camphor nuances combine unexpectedly well. One hundred ppm is the ideal level of addition for authentic-style blackcurrant flavors. This ingredient is less useful in buchu oil-based blackcurrant flavors, which are simplistic and make no effort toward realism.

Blueberry: A level of 100 ppm also works well in blueberry flavors. The damson/berry note enhances the realism of the fruit component, and the camphor note adds complexity and interest to the dominant floral linalool top note.

Strawberry: Much more caution should be applied to strawberry flavors, but this ingredient can be quite helpful, especially in wild strawberry flavors. The best level of addition is around 20 ppm.

Other Fruit Flavors

Passion fruit: Theaspirane is an excellent addition to authentic-style passion fruit flavors, simultaneously adding depth and realism, combined with significant lift to the profile. The ideal level of addition is 150 ppm.

Mango: The effect in mango flavors is very similar to that in passion fruit flavors, and the added lift is especially welcome in a flavor category that can easily become dull. The best level of addition is also 150 ppm.

Guava: This ingredient can also help to offset the similarly rather cloying overall character of many guava flavors. It adds authenticity and brightness at levels of addition around 50 ppm.

Peach and apricot: The effect in both peach and apricot flavors is much more subtle, but theaspirane is still a very worthwhile ingredient to consider using at levels in the region of 20 ppm, working well in conjunction with linalool.

Cherry: A level of 20 ppm is also quite effective in most reasonably realistic styles of cherry flavor, brightening the profile and adding realism. However, it is probably not worth adding to flavor

types that are overly dominated by benzaldehyde.

Tea Flavors

Black tea: As the name implies, theaspirane is an outstanding raw material for tea flavors. The best level of use of black tea flavors varies according to the profile required. Low levels, around 20 ppm, can be effective in flavors with a dominant linalool/linalyl acetate note, such as Earl Grey teas. However, I personally prefer a higher level in the region of 100 ppm for a more authentic style.

Green tea: Although theaspirane may seem more obviously suited to black tea flavors, it is in fact almost equally at home in green tea flavors, where a level of about 50 ppm is ideal.

Red tea: Fifty ppm is similarly the optimum level of addition to oolong and other red tea styles of flavors, which in some respects are structured in an intermediate way between black and green tea flavors.

Floral Flavors

Chrysanthemum: This subtle and interestingly complex flavor is ideally suited to theaspirane, combining very similar profiles. Levels of use can be varied but, in my opinion, higher levels are much better, ideally around 100 ppm.

Rose: Theaspirane works very well when used in conjunction with damascenone or the damascones in rose flavors, adding depth and realism. The best level of use is 50 ppm.

Jasmine: Unsurprisingly, it is also a perfect addition to jasmine flavors, especially those intended primarily for addition to green tea. Levels vary, but the best level of use is around 50 ppm.

Alcoholic Drink Flavors

Tequila: The unusual odor pairing of theaspirane works well in most alcoholic drink flavors, but nowhere better than in tequila flavors. A relatively high level of addition, around 150 ppm, works best.

Whisky: Whisky flavors, especially those with a significant peaty character, are also greatly enhanced by this ingredient. The best level of use varies from 50 ppm in lighter styles to 150 ppm in very peaty, smoky flavors.

Rum: White rum flavors work best with moderate levels of theaspirane, around 50 ppm, but dark rum flavors can use much higher levels, up to 200 ppm.

Brandy: The same comments are also true for brandy and cognac flavors, but 50 ppm is uniformly the best level of addition, irrespective of flavor style.

Wine: Theaspirane is helpful in all of the many different styles of wine flavors, but the best use level does vary significantly. Floral white wine styles need around 30 ppm, but most other styles work better with only 10 ppm.

Other Flavors

Honey: This ingredient works very well in all honey flavors. A level of 40 ppm is a good starting point in honey flavors with a strong floral component, such as lavender honey. Twenty ppm is better in clover and most other styles.
