



Interesting Umbelliferous WONF Ingredients

Celery, coriander and cumin seed oils add complexity to natural and artificial flavors.

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Natural raw materials can add complexity to WONF (with other natural flavors) flavors as well as artificial flavors. They also provide unique profile characters and make flavors much more difficult to match, particularly when they are used in unexpected combinations.

The umbelliferous plant family is unusually rich and varied and the three examples in this article demonstrate the wide range of possibilities—even within a very familiar botanical family of quite closely genetically related plants. The components listed are certainly not comprehensive. They have been selected either because they are present in significant quantities or because they contribute significant sensory attributes to the overall flavor profile. All the use rates are expressed as parts per million in a finished flavor that is intended for use at 0.05% in ready-to-drink beverages or bouillon.

Peanut: Peanut flavors are not quite as meaty in character as walnut flavors but, nevertheless, 100 ppm of this oil is a very worthwhile addition.

Rum: The effect of celery seed oil in rum flavors is important, especially for its taste effects in a flavor category that can be very aroma dominated, at levels in flavors around 10 ppm.

Vanilla: Subtle additions, as low as 5 ppm, add realistic complexity in vanilla flavors and are especially useful to help disguise excessive balsamic notes.

Beef: Significant additions of celery seed oil to beef flavors would result in an obvious seasoning character, but levels in the region of 5 ppm subtly add depth and realism.

Chicken: Very similar comments apply to chicken flavors but the level of use is lower, around 2 ppm.

Plum: This may seem an unlikely ingredient for plum flavors but the addition of only 2 ppm has a very positive effect.

Celery Seed Oil

FEMA# 2271

Components

limonene (citrus)	72%
β-selinene (pepper)	12%
myrcene (mango)	5%
3-butyl 4,5-dihydrophthalide (celery)	4%
3-butyl phthalide (celery)	3%
3-butyl 3,4,5,6-tetrahydrophthalide (celery)	2%

Celery seed oil (*Apium graveolens*) has an interesting, overtly herbal but also somewhat meaty, character. It can be used in a wide range of seasoning blends, usually in a secondary role, but it is especially useful at high levels in nut and maple flavors. Lower levels can be very helpful to round out meat flavors and also in a wide range of brown flavors.

Uses

Walnut: Nut flavors, both natural and artificial, can tend to taste thin. Celery seed oil is a great way to add depth and lingering taste effects in the region of 500 ppm.

Maple: Celery seed oil (and also, in a very similar context, lovage root oil) works very well in maple flavors at around 300 ppm, adding complexity and softening the dominant fenugreek notes.

Coriander Seed Oil

FEMA# 2334

Components

linalool (lavender)	74%
γ-terpinene (mandarin)	6%
camphor (camphor)	5%
α-pinene (pine)	3%
para-cymene (petroleum)	2%
limonene (citrus)	2%
geranyl acetate (rose, fruity)	2%

Coriander seed oil (*Coriandrum sativum*) is important in many seasonings, especially curry blends, and as a major component of gin spice blends. It is especially interesting in WONF flavors because the secondary components in the essential oil all fortuitously serve to facilitate the incorporation of the primary component (linalool) into many fruit flavors, adding realism and complexity, even at relatively high levels.

Uses

Gin: Gin flavors are based primarily on a mixture of coriander seed and juniper berry oils. Levels vary widely, but 5,000 ppm in a flavor is a good starting point.

Apricot: Coriander seed oil is particularly pleasant in apricot flavors. A typical level is around 1,500 ppm. Higher levels can be very attractive but become more of a caricature than a realistic flavor.

Peach: Levels in peach flavors are generally a little lower, in the region of 1,000 ppm, but have a similar effect.

Grape: Grape flavors also normally contain high levels of linalool; coriander seed oil at about 800 ppm makes a useful addition in this category of flavor.

Passion fruit: The same comments apply to passion fruit flavors and, similarly, 800 ppm is an attractive level.

Strawberry: Levels are a little lower in strawberry flavors and 500 ppm is normally a good starting point.

Ginger: Ginger flavors can often be quite complex and veer away from the core ginger character substantially, especially in beverage flavors. A level of 300 ppm is an effective level in the important ginger ale category of flavors.

Raspberry: A good level of addition to add a little lift and brightness to raspberry flavors is 200 ppm.

Mango: The effect is very similar in mango flavors and the ideal level of addition is similar, in the region of 150 ppm.

Lemon: Small additions of coriander leaf oil work well in almost all citrus flavors, but especially lemon flavors. A level of 100 ppm is a good starting point.

effect. Cumin seed oil works well at 100 ppm.


Apple: Only 10 ppm of this essential oil is required to give a subtle green skin nuance to fresh apple flavors.

Ginger: Cumin seed oil should be used very sparingly in ginger flavors intended for beverages but it can be quite effective at 10 ppm in more pungent ginger flavors intended for bakery applications.

Melon: Melon flavors are often harshly simplistic and cumin seed oil at 5 ppm in a flavor helps to add welcome complexity without sacrificing impact.

Peach: Skin notes are especially attractive in peach flavors and this essential oil can assist in creating a realistic peach skin effect at 3 ppm.

Coffee: The impact in coffee flavors is admittedly relatively minor, although 2 ppm adds usefully to the impression of freshly brewed coffee.

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Cumin Seed Oil

FEMA# 2343

Components

cuminic aldehyde (cumin)	33%
γ-terpinene (mandarin)	20%
mentha-1,4-dien-7-al (cumin)	15%
β-pinene (pine)	12%
para-cymene (petroleum)	9%

Cumin seed oil (*Cuminum cyminum*) is also obviously vitally important in curry blends, along with many other attractive Asian seasonings. It is particularly interesting in WONF flavors because this unexpected ingredient adds useful and attractive nuances to quite a varied range of flavors.

Uses

Black tea: Black tea flavors are a category where it can be difficult to achieve realism, and cumin seed oil can add an attractive, fresh nuance at around 200 ppm.

Lemon: Cumin seed oil can have a similarly fresh, peely effect to perilla leaf oil in lemon flavors. A level of 100 ppm is a good place to start.

Malt: It is difficult to find natural notes that add realistic complexity to malt flavors without exerting an unattractive flattening