Interesting WONF Ingredients

Adding unexpected twists and nuances to flavors

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Small additions of natural raw materials can be very helpful, especially when formulating natural WONF flavors (With Other Natural Flavors). They can provide elusive, hard-to-find notes, and bring the flavor closer to an optimum level of complexity; they can also make a flavor much harder to replicate, especially if the raw materials are a little unusual or unexpected. This article lists some WONF ingredients, which in my experience are especially useful in formulations. All of them are FEMA GRAS listed, and the components listed are either present in significant quantities or contribute significantly to the odor of the raw material. Likewise, the quantities given are all typical (rather than specific), and often have wide variations in practice, even in genuine oils.

Neroli Oil; *Citrus aurantium (Rutaceae)*; FEMA# 2771

Components:

Linalol (lavender)	40.0%
Limonene (citrus)	12.0%
Linalyl acetate (bergamot)	5.0%
Methyl anthranilate (Concord grape)	0.1%
Indole (animalic)	0.1%

The floral, lavender note of this ingredient could be used in formulation of a wide range of flavors, especially fruit flavors. Although the presence of indole and methyl anthranilate adds to the interest in this ingredient, it simultaneously reduces the number of potential applications. However, blueberry, blackcurrant and grape flavors can easily take advantage of all the components of neroli oil, which is particularly good in these flavors. It can also be used at lower levels in orange and strawberry flavors to give an interesting twist.

Rue Oil; *Ruta graveolens (Rutaceae)*; FEMA# 2995

Components:

Undecan-2-one (blue cheese, waxy)	40.0%
Nonan-2-one (blue cheese)	20.0%
2-Nonyl acetate (fruity, waxy)	13.0%

Some European cookery books of the Middle Ages show that rue was a popular herb of the period. This could, perhaps, be due to taste preferences of the times, or a result of the relative absence of more interesting spices from the East. However, with changing times and tastes, this herb has declined in popularity, and today many chefs are unfamiliar with it. Nonetheless, the fruity, blue cheese note of rue is very helpful at low levels in a wide range of dairy flavors, especially in cheddar and blue cheese flavors. It is also surprisingly useful in some fruit flavors, especially pineapple.

Boronia Absolute; *Boronia megastigma (Rutaceae)*; FEMA# 2167

Components:

β-Ionone (violet, cedar)	13.0%
Methyl jasmonate (jasmine)	1.3%

True boronia absolute is hard to find, but it is definitely worth the trouble. Its unique combination of violet and jasmine notes is extremely helpful in a range of natural flavors, with raspberry being the most obvious candidate; the raw material works especially well in natural raspberry flavors. In fact, boronia absolute is a great raw material in formulation of most berry flavors—blackberry, blackcurrant, blueberry and even strawberry. Moreover, as methyl jasmonate is a vital component of lemon flavors, boronia performs well in natural lemon and orange flavors when used at a lower level.

Mimosa Absolute; *Acacia decurrens (Leguminosae)*; FEMA# 2755

Components:

Nonanal (peely)	8.0%
Octanal (peely)	5.0%
Benzyl acetate (berry)	1.2%

Mimosa is a great raw material to add complexity and natural depth to a wide range of fruit flavors—from apricot and cherry to raspberry and apple. As the ingredient is extremely difficult to identify, either by odor or analysis, it makes an excellent matching confuser. However, as many of the commercial offerings only have a passing acquaintance with the genuine material, it is important to be selective when choosing a supplier of this ingredient.

Cassie Absolute; *Acacia farnesiana (Leguminosae)*; FEMA# 2260

Components:

Methyl salicylate (wintergreen)	50.0%
Anisaldehyde (hawthorn)	10.0%
Geraniol (rose)	8.0%

Like mimosa, cassie absolute is hard to identify and works well in several natural fruit flavors. The ingredient is very effective in natural cherry flavors and is almost equally good in natural strawberry, blackcurrant, blueberry and raspberry flavors.

Genet Absolute; *Spartium junceum (Leguminosae)*; FEMA# 2504

Components:

Linalol (lavender)	1.7%
Oct-1-en-3-ol (mushroom)	1.2%
Methyl anthranilate (Concord grape)	0.6%

This is yet another highly complex and interesting raw material, which can be used in a wide range of flavors; that said, it works best in natural apricot, blackcurrant, blueberry, grape and cherry flavors.

Osmanthus Absolute; *Osmanthus fragrans (Oleaceae)*; FEMA# 3750

Components:

β-Ionone (violet, cedar)	10.0%
γ-Decalactone (peach)	8.0%

Osmanthus absolute possesses a unique combination of notes, and hence is not a good matching confuser. However, its biggest advantage is that it almost lacks secondary notes that do not work well in fruit flavors. Clearly, it can be used at very high levels, especially in natural raspberry, peach, strawberry, apricot and blackberry flavors.

Ambrette Seed Oil; *Hibiscus abelmoschus (Malvaceae)*; FEMA# 2051

Component:

Ambrettolide (musk, berry)	5.0%

Ambrette seed oil offers ambrettolide—the best musk note in flavor applications—at a workable level. It is free from perfumed, powdery characters and has a hint of fruity berry notes that fit well into natural blackberry flavors. Angelica root and seed oils are the only other useable natural musk vehicles. However, they contain exaltolide—a less useful musk—at significantly lower levels, and more notable earthy secondary characters. Other interesting uses of ambrette seed oil include natural peach, apricot, raspberry and maple flavors.

Blackcurrant Bud Concrete; *Ribes nigrum (Grossulariaceae)*; FEMA# 2346

Components:

δ-3-Carene (petroleum)	1.8%
Caryophyllene (carrot)	1.3%
Terpinen-4-ol (nutmeg)	0.5%
4-Methoxy 2-methyl 2-butanethiol (catty)	0.03%

Blackcurrant bud concrete derives its strong, attractive catty note from 4-methoxy 2-methyl 2-butanethiol; the second extraction process with ethanol, which is used to make the absolute, significantly lowers the relative level of this ingredient. Also, strange as it may seem, the concrete contains very little material that is not soluble in ethanol, so there is no practical reason to use the absolute rather than the concrete. Blackcurrant buds concrete provides a uniquely realistic note in natural

blackcurrant flavors, and is superb in natural grapefruit flavors. Unlike buchu oil, none of the secondary characteristics of this raw material intrude in the finished flavor. Additionally, it can be used to a good effect in other flavors requiring a catty note; peach, apricot, passionfruit, mango and guava are the most obvious candidates.

Coriander Leaf Oil; *Coriandrum sativum (Umbelliferae)*; FEMA# 2334

Components:

Dec-2-enal (cilantro, fatty)	25.0%
Dodec-2-enal (cilantro)	6.0%
Undec-2-enal (cilantro)	5.0%

The composition of coriander leaf oil is quite different than that of the better known coriander seed oil, which contains 74% linalool (lavender). The obvious use of this material is in seasoning blends, but the oil has an excellent and unique effect in many citrus flavors, especially mandarin, tangerine, orange and grapefruit.

Galbanum Oil; *Ferula galbaniflua (Umbelliferae)*; FEMA# 2501

Components:

Undeca-1,3,5-triene (bell pepper)	1.0%
2-Methoxy 3-iso butyl pyrazine (bell pepper)	0.05%

This essential oil, like many of the other raw materials mentioned here, is used in far larger volumes in fragrances than flavors. It has a strong, very light, bell pepper aroma and can be used to good effect in many vegetable flavors. It also adds a lift to natural blackcurrant and blueberry flavors.

Lovage Root Oil; *Levisticum officinale (Umbelliferae)*; FEMA# 2651

Component:

3-Butylidene dihydrophthalide (celery)	60.0%

If galbanum oil represents the epitome of light top notes, lovage root oil is the diametric opposite. It has a lovely, very heavy, savory taste and can be used in most meat flavors and natural brown flavors, especially maple.

Roman Chamomile Oil; *Anthemis nobilis (Compositae)*; FEMA# 2275

Components:

iso-Butyl angelate (berry, apple)	30.0%
iso-Amyl angelate (berry, apple)	18.0%

This oil is completely different from Hungarian chamomile oil (FEMA# 2273), which is a source of chamazulene, an antihistamine. Roman chamomile has no medicinal properties, but it does have a unique fruity character. While it is clearly applicable to natural apple and pear flavors, it is also very effective in natural peach, apricot, mango and passionfruit flavors.

Costus Root Oil; *Saussurea lappa (Compositae)*; FEMA# 2336

Components:

Costus lactone (hair, berry)	11.0%
4-Ethyl octanoic acid (hair)	1.0%

Dog owners will instantly recognize the aroma of this oil as the typical miasma surrounding a particularly wet and messy hound. However, despite the unpromising connections, tiny additions of this ingredient work wonders in natural berry flavors—a natural raspberry flavor suddenly acquires the realistic, mouthwatering character of raspberry skin.

Tagetes Oil; *Tagetes minuta (Compositae)*; FEMA# 3040

Component:

Ocimene (mango)	40.0%

This unusual oil has the character of fresh, ripe, mango skins. It can radically improve natural mango flavors, and can also work very well, at much lower levels, in a range of other natural flavors such as peach, apricot, guava and lychee. The oil can oxidize if it is not stored correctly; oxidized oils have a much weaker odor and noticeable viscosity.

Davana Oil; *Artemisia pallens (Compositae)*; FEMA# 2359

Components:

Davanone (berry, damson)	50.0%
Ethyl cinnamate (guava)	6.0%

Adulteration of davana oil is quite easy to detect, but this has not proved to be much of a deterrence. Therefore, suppliers of this ingredient must be selected with care. The unique character of this ingredient is excellent in all berry flavors, but especially good in natural raspberry flavors. It is also very useful in natural apple flavors.