



Citrus focus

Organoleptic Characteristics of Flavor Materials

Grapefruit, lemon, lime, clementine oil and beyond

Gerard Mosciano

Whenever I taste, I always record my evaluations and then enter them into my electronic memory, which resides on my computer's hard drive. I found out long ago that while I have a tendency to forget, my hard drive doesn't. There are several reasons I tasted every day before I began consulting and now taste new items every chance I get.

First: It was a part of my initial training. L. Strasburger, my mentor, and I tasted two ingredients every day. He managed to taste every approved ingredient once every two or three years, and every newly approved ingredient as they became available. He stressed that added flavor experience lets you see additional potential applications for any flavor ingredient.

Second: I'm convinced that it is a great training tool. When a tasting group has several senior flavorists and an assortment of technicians and apprentices, tasting every day gives everyone a chance to develop a common descriptive language and a great means to tap into the group's flavor experience.

Third: I am always looking for some ingredient that is new and better and will impart a better flavor character for a lower cost. Today, with the emphasis on natural flavors, there has been an exceptional improvement in naturally derived fruit and botanical products and their essences, isolates and fractions. In addition, there has been continual improvement in production technology and processes that are used to produce natural products, enabling a greater fidelity, more intense flavor, usually for a lower cost. Since natural products are source-specific, it is necessary to evaluate several sources to find the best product.

Fourth: I firmly believe that one should

have ready sources of supply for a wide range of flavor new ingredients. After you have accepted a new project is not the time to start searching for appropriate ingredients. Instead, you should be able to search your tasting library and order in fresh samples of the most suitable new ingredients and pull down some of your golden oldies to start the project.

Finally: I strongly feel that tasting and evaluating new flavor ingredients hones your tasting ability.

In this month's column, I reviewed my flavor database and came across some recent organoleptic evaluations of citrus products. Some of the newer sources are quite good and worthy of inclusion among the older classics. In fact, some of the newest ingredients could not have existed even a few years ago, because they are products of newer technologies and thus possess organoleptic characteristics that are unique and

Gerard Mosciano is joined by Judith Michalski, senior creative flavorist, Edlong Flavors; Carl Holmgren, chief creative flavorist, director of flavor development, Brooklyn by Perfetti Ltd.; and Douglas Young, principle flavorist, Symrise, in the organoleptic evaluations presented here.

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very exciting. I have chosen to highlight a variety of citrus products from a range of sources. I will be highlighting other families of ingredients in future articles.

Evaluations

Clementine Oil

Source: The Lebermuth Company

Odor: @ 1.0 percent. Sweet, citrus, juicy orange, mandarin and tangerine with tangy peely nuance. It has a refreshing fruity apricot note.

Taste: @ 10 PPM with 5 percent Sugar + 0.1 percent Citric Acid. Sweet juicy citrus, orange, mandarin, tangerine body with fruity aldehydic apricot and peach nuances.

Possible applications: Fruit punches, citrus punches, mandarin and tangerine notes sweet orange nuances, tropical notes, apricot and peach flavors.

► **Lebermuth Co Inc;** *tel:* 219-259-7000; *www.lebermuth.com*

Fresh Squeezed Florida Grapefruit FTNF

Source: Florida Worldwide Citrus

Odor: @ 5 percent. Fresh citrus, slightly peely grapefruit with a sulfurous top note, sour orange and woody with an aldehydic body and a nootkatone depth with a tropical pulpy nuance.

Taste: @ from 10-30 PPM with 5 percent Sugar + 0.10 percent Citric Acid. Fresh squeezed astringent tangy grapefruit citrus, woody with ripe pulpy nuances.

Possible applications: Grapefruit beverage top notes, orange blenders, mandarin and tangerine nuances.

► **Florida Worldwide Citrus;** *tel:* 941-746-9183; *www.floridaworldwidecitrus.com*

Fresh Squeezed Florida Orange FTNF

Source: Florida Worldwide Citrus

Odor: @ 5.0 percent. Fresh navel orange and tangerine-like, citrus juicy body, aldehydic, slightly peely, woody valencene and sinensal-like.

Taste: @ from 10-50 PPM with 5 percent Sugar + 0.1 percent Citric Acid. Fresh impacting juicy essence orange citrus, aldehydic with a slight tangerine nuance.

Possible applications: Orange juice add back, confections such as gummies, fruit punches, peach and tropical nuances, tutti frutti flavors.

► **Florida Worldwide Citrus;** *tel:* 941-746-9183; *www.floridaworldwidecitrus.com*

Grapefruit Flavor, Super Fresh Squeezed FTNF

Source: Florida Worldwide Citrus

Odor: @ 5.0 percent. Fresh, full bodied characteristic peely and aldehydic grapefruit with a slightly bitter woody citrus nuance.

Taste: @ from 25-40 PPM with 5 percent Sugar + 0.10 percent Citric Acid. Citrus, fresh slightly sulfurous tart and astringent grapefruit with a lingering bitterness.

Possible applications: Grapefruit juice add back, citrus punches.

► **Florida Worldwide Citrus;** tel: 941-746-9183; www.floridaworldwidecitrus.com

Grapefruit Key Natural

Source: International Flavors and Fragrances

Odor: @ 100 percent. Sweet, citrus, orange, fresh grapefruit, with tropical mango, berry and peach nuances.

Taste: @ 10 PPM. Sweet fresh grapefruit juice, aldehydic, citrus, rindy with a slight terpy nuance.

Possible applications: Grapefruit top notes, peach, tropical fruits, lemon and orange beverages.

► **IFF;** tel: 732-335-2616; www.iff.com

Lemon Essence Oil

Source: Sunkist

Odor: @ 100 percent. Sweet, lemon/lime, fresh juicy candy citral with a slight floral nuance.

Taste: @ 10 PPM with 5 percent Sugar + 0.1 percent Citric Acid. Sweet juicy fresh lemon, lemonade, citral-like with a candy citrus nuance.

Possible applications: Lemon beverages, lime booster for beverages, citrus punches.

► **Sunkist;** www.sunkist.com

Lemon Volatile Fractions

Source: Treatt USA

Odor: @ 100 percent. Sweet ethereal lemon, citrus-like with an impacting acetaldehyde top note and pulpy juicy body nuances.

Taste: @ 50 PPM with 5 percent Sugar + 0.15 percent Citric Acid. Fresh tangy lemon juice with tangy fruity nuances and a clean citrus peel afternoon.

Possible applications: Lemon juice enhancers and top notes for beverages, citrus additives.

► **Treatt USA;** tel: 800-866-7704; www.treatt.com

Lime Oil 4x Expressed

Source: Treatt USA

Odor: @ 100 percent. Fresh, green, sweet juicy lime, with citral and α -terpineol notes.

Taste: @ 15 PPM with 5 percent Sugar + 0.1 percent Citric Acid. Fresh, juicy lime, clean, lingering with a bright body.

Possible applications:

Lemon, lime, tropical nuances, fresh notes for mint.

► **Treatt USA;** tel: 800-866-7704; www.treatt.com

Lime Volatile Fraction

Source: Treatt USA

Odor: @ 5.0 percent.

Sweet, juicy citrus lime with a fresh tangy top note and a green terpeneol nuance.

Taste: @ 50 PPM with 5 percent Sugar + 0.15 percent Citric Acid. Fresh juicy lime with pulpy citrus terpy nuances.

Possible applications: Lemon and lime beverage top notes, mint enhancers.

► **Treatt USA;** tel: 800-866-7704; www.treatt.com

Menthene-8-Thiol, Grapefruit Mercaptan, Pardiff Grapefruit Oil Natural

Source: International Flavors and Fragrances

Odor: @ 0.01 percent. Grapefruit, citrus, thiomenthone, cooling, rindy, juicy with nootkatone nuances.

Taste: @ 0.01 PPM. Fresh squeezed grapefruit juice, nootkatone-like bitterness with tropical and citrus nuances.

Possible applications: Grapefruit and orange juice, raspberry, black currant, grape and cranberry.

► **IFF;** tel: 732-335-2616; www.iff.com

Orange Aroma, Water Phase Essence

Source: Sunkist

Odor: @ 100 percent. Pungent, ethereal orange juice with a fresh green estery aldehydic citrus note with a waxy nuance.

Taste: @ 100 PPM with 5 percent Sugar + 0.05 percent Citric Acid. Fresh orange juice with tangy citrus and fruity nuances.

Possible applications: Orange juice top note, citrus punches and lemon grapefruit juice enhancer.

► **Sunkist;** www.sunkist.com

Orange Essence Oil

Source: Sunkist

Odor: @ 100 percent. Juicy orange, citrus-like with fresh aldehydic pulpy body notes and a fresh tangerine nuance.

Taste: @ 10 PPM with 5 percent Sugar + 0.05 percent Citric Acid. Juicy orange with sweet rich aldehydic pulpy notes and a heavy waxy citrus nuance.

Possible applications: Orange juice enhancers, fruit punches and citrus blends.

► **Sunkist;** www.sunkist.com

Orange Flavor F-1 FTNF

Source: Florida Worldwide Citrus

Odor: @ 1.0 percent. Fresh lingering orange juice with a slight peely oily aroma.

Taste: @ 0.10 percent with 5 percent Sugar + 0.05 percent Citric Acid. Fresh orange juice with a nice aldehydic body.

Possible applications: Orange juice add back, fresh impact for citrus beverages and fruit punches, tropical nuances.

► **Florida Worldwide Citrus;**
tel: 941-746-9183;
www.floridaworldwidecitrus.com

Orange Flavor, Super Fresh Squeezed FTNF

Source: Florida Worldwide Citrus

Odor: @ 1.0 percent. Impacting fresh and slightly green orange with an ethyl vinyl ketone lift and a slightly oily nuance.

Taste: @ from 1-10 PPM with 5 percent Sugar + 0.10 percent Citric Acid. Fresh squeezed orange juicy.

Possible applications: Orange juice add back, top notes for orange beverages and citrus notes in general.

► **Florida Worldwide Citrus;**
tel: 941-746-9183; www.floridaworldwidecitrus.com

Orange Juice Natural Extract

Source: Polarome

Odor: @ 100 percent. Sweet, fresh juicy orange, slightly peely with a fruity pulpy and an aldehydic nuance.

Taste: 0.1 percent with 5 percent Sugar + 0.1 percent Citric Acid. Juicy, sweet fresh pulpy orange with a slight peely tangerine nuance.

Possible applications: Good pulpy orange juice notes for beverages and punch drinks.

► **Polarome International Inc;** *tel:* 201-309-4500;
www.polarome.com

Orange Oil Sesquiterpeneless

Source: Berje

Odor: @ 1.0 percent. Citrus, sweet aldehydic orange with a heavy floral peely character. It has fatty and waxy notes on dryout.

Taste: @ 25 PPM. Fatty, aldehydic, sweet orange with a good citrus body. It has peely and green nuances.

Possible applications: Baked citrus applications, citrus beverages for stability, tropical nuances, fruit punches for depth notes.

► **Berje Inc;** *tel:* 973-748-8980; www.berjeinc.com

Orange Oil Terpene Free

Source: Artech International

Odor: @ 1.0 percent. Sweet orange with fruity, juicy, aldehydic, citrus and woody nuances.

Taste: @ 10 PPM with 5 percent Sugar + 0.1 percent Citric Acid. Sweet orange, aldehydic, juicy, peely, fresh waxy with an interesting orange syrupy marmalade nuance.

Possible applications: Orange beverages, fruit punches, baked applications.

► **Artech International;**
tel: 201-460-8306



Orange Peel Extract 1:1

Source: Moore Ingredients

Odor: @ 100 percent. Sweet citrus, woody, floral, aldehydic orange marmalade with a slight tangerine candy and fruity note and a nootkatone-like nuance.

Taste: @ 0.05-0.08 percent with 5 percent Sugar + 0.10 percent Citric Acid. Drying, woody orange marmalade, citrus and slightly peely, slightly dried fruit and tangerine-like.

Possible applications: To enhance orange beverages, herbal teas, marmalade and candy flavors.

► **Moore Ingredients;** *tel:* 513-881-7144;
www.moorelab.com

Orange X100 Colorless

Source: Danisco

Odor: @ 1.0 percent. Sweet, citrus orange flesh, woody valencene and sinensal-like with a heavy waxy aldehydic nuance.

Taste: @ 10 PPM with 5 percent Sugar + 0.10 percent Citric Acid. Sweet juicy fleshy orange citrus, woody with a slight tangerine nuance.

Possible applications: Clear citrus punches, orange juice top notes, tangerine and tropical nuances.

► **Danisco USA;** *tel:* 913-764-8100; *www.danisco.com*

Yuzu Flavor Natural

Source: Lionel Hitchen

Odor: @ 10 percent. Sweet mellow grapefruit, orange citrus-like with a slightly terpy astringent nuance.

Taste: @ 10-15 PPM with 5 percent Sugar + 0.05 percent Citric Acid. Sweet, citrus orange and grapefruit with a tangy pulpy body.

Possible applications: Citrus blends and punches, tropical blends, mandarin and orange nuances, tonic beverages and grapefruit bodies.

► **Lionel Hitchen;**
tel: 44-1962-760815;
www.lhn.co.uk

The products above represent the most advanced extraction, distillation and separation technology. Their availability will definitely improve the fidelity and character of the products in which they will be incorporated. I know, from my own experience, what I would have given to have had any of these materials in my raw material book even a few years ago. I am not implying these are the best products at the best prices there are, however, and so I will continue to evaluate newer products from both new and old suppliers. ■

