

Reconnecting with Essential Oils

Flavor chemist Marie Wright on the advantages and differentiating effects of whole natural ingredients in flavor compositions

As individual natural flavor chemicals have come onto the market, essential oils, absolutes and extracts have taken a back seat in natural flavor compositions, notes Marie Wright, flavor creation manager for IFF. Wright presented her insights into reconnecting with whole natural products during a talk titled “Secret Agents: the Mysterious and Magical Treasures of Taste,” at the fall meeting of the Women in Flavor and Fragrance Commerce, “Saving Essential Oils,” in Saddle Brook, New Jersey. In a recent conversation with *P&F* magazine, Wright discussed the advantages of essential oils and similar products in flavor compositions, compared to individual components, and issues related to balancing cost with performance.

Essential Oil Resurgence

“I went through a phase of development as a flavorist where I was very excited by all the discoveries of the components of nature, which took place in the 1980s and 1990s,” says Wright of the research that led to the boom in the availability and use of single component nature-identical flavor chemicals. “As a flavorist I was very driven to try to replicate the natural tastes of foods and it was a lot easier to do that using single chemicals rather than a mixture of components found in the essential oils.”

However, as the demand for natural flavors grew, nature-identical chemicals were deemphasized in favor of natural essential oils and extracts. But this resurgence was short-lived as every year the availability of single natural chemicals has increased. “Today we have a much wider variety of natural chemicals at our disposal in flavors,” says Wright.

As a result, she adds, “We have reduced the use of essential oils in our flavor formulas by replacing them with single chemicals. Essential oils tend to be driven by a number of major components at high levels. You’re utilizing them for those particular components, so we’re able to replace that with the single chemicals. And of course from a cost perspective it’s probably less expensive to use single chemicals than it is to use the oils. So we’re using [the oils] perhaps less and less compared to the 1990s.”

In addition, says Wright, “Because the use [of essential oils] has gone down, the emphasis within the [industry’s]



Using a whole natural product such as clove bud oil in a natural banana flavor—as opposed to applying only the oil’s characterizing constituent, eugenol—creates a more rounded and powerful effect, according to flavor creation manager Marie Wright.

flavorist training programs changed. People are not receiving the intricate training that I was lucky enough to receive when I trained as a flavorist. We were using these oils; they played much more of a major part within flavor compositions.”

Yet, as natural flavors have boomed over the last decade—becoming much more than a mere trend by feeding off of a greater overall consumer and customer emphasis on health and wellness—there is a renewed opportunity and need for essential oils in flavor formulations. “It’s here to stay,” says Wright of the growth in natural flavors. “Everybody realizes that.”

Advantages: Roundness, Bloom, Substantivity and Emotion

“We look for more differentiation in products and flavors,” says Wright, “and look to go from a delicious flavor to a compelling flavor that will enhance a product and enable repeat purchase due to a connection with that product.” As a result, she says, “We’re starting to see the revival of essential oils and the excitement over them.”

What do ingredients such as whole oils or extracts bring to a formula, compared to a single natural component? “When you use a single chemical [such as] eugenol—which is the major component in clove bud oil—and use it in a natural banana flavor, there is only so much you can add before it tastes like a chemical and sticks out,” says Wright. “If you add the oil [instead], you

can actually add more because it's much more rounded. It tends to lay better within the flavor formula. You can put more in and, ultimately, you can make your flavor more powerful. I don't think [all] flavorists are necessarily aware of that." She adds that the complexity of essential oils means that they have effects that must be learned and managed. "They take a little more to learn how to use, but that's how we learn to make flavors—trial and error."

Citing other examples, Wright says that boronia, jasmine and osmanthus "contain many of the components that might have some relevance to peach and raspberry flavors by adding very small amounts. You're allowing for a number of different components and characteristics of the flavors. You get this nice blended taste for the profile."

In addition to rounding out flavors, Wright takes a cue from perfumery in extolling the ability of essential oils to add bloom and substantivity to flavors. "I'm looking at those two terms in relation to flavor creation and am finding that essential oils and absolutes can actually offer some great characteristics. I think of bloom in flavor as the aroma impact, and I think of substantivity as the ability for the flavor to be complex and full throughout the taste within a product. I'm finding that utilizing essential oils can really enhance those two characteristics."

Finally, she notes that essential oils also wield the power of emotion. "We know that aroma has an impact on emotion and memory, and we know that a lot of these essential oils, absolutes and extracts are extremely powerful. We believe that utilizing and understanding what these components do in terms of emotion or memory can change the emotional profile of a flavor. For example, you could have two citrus flavors that score hedonically the same, but they could have very different emotional profiles [based] on how you utilize the essential oils and other ingredients within them."

Examples are legion, she says, including vanilla and lavender for relaxation. "Essential oils have a particular taste and aroma that, when we experience them, takes us back to something or changes the way we feel. That power—which you can incorporate within your flavor profile—is underestimated. I do a lot of playing with those ingredients to see their effects." In doing so, she says, "You're then taking your flavor into a compelling direction, which is what we're after. We're looking for differentiation in the marketplace."

Reorienting Flavorists

How can flavorists be retrained to take a fresh look at essential oils? "You have to go back to basics and start off by learning and understanding the composition of the essential oils," says Wright. "Understanding the composition—the major components of the different oils—allows you to understand how to use them. It's one of the most wonderful parts of learning."

This understanding requires an education in botanical families and properties, historical usage of these products in flavors, applicability within contemporary flavors, and technical aspects of composition. "That can be done at the trainee level or in reorienting senior flavorists," says Wright, "because everybody—if you love what you do—loves to keep learning or relearning things."

The Balance: Cost and Performance

Of course, when it comes to natural products with a premium attached, there are always concerns about cost. This is in part due to the "vulnerability of these products to weather-related crop conditions," says Wright. "You don't want to use something that's going to be vulnerable. But if we don't use them then they'll become *more* vulnerable. We've seen quite a few [examples] over the years, including grapefruit. We can certainly make grapefruit replacers, but they won't have the same beauty as a grapefruit oil. The same is true for cocoa replacers, etc. That's something people are a little afraid of, and that can impact use."

Yet, says Wright, the use of essential oils and similar products has a unique value. "With these we continue to resist the commoditization of flavors, because flavors really drive the point of difference. When you're composing a formula, you need to be aware of what the cost of the individual ingredients is. But [essential oils and extracts] are powerful, and you may be able to get a small amount in a formula with quite a large effect. We can't get away from the fact that they tend to be a little pricier compared to the single chemicals, but they may effectively offer more bang for the buck—and take a product to the next level. It really is a balance. I may not use as much [of an essential oil] as I'd like in a formula because of cost, but it won't prevent me from using it."

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