

Natural Flavors Hit the Label

By Donna Berry, Contributing Editor

FDA disqualifies numerous ingredients from ever being perceived as natural by labeling them as artificial or synthetic in the *Code of Federal Regulations (CFR)*. Only one ingredient gets the descriptor “natural” per FDA: flavors.

Natural flavors in the United States are defined in 21 *CFR* 101.22, as “the essential oil, oleoresin, essence or extractive, protein hydrolysate, distillate, or any product of roasting, heating or enzymolysis, which contains the flavoring constituents derived from a spice, fruit or fruit juice, vegetable or vegetable juice, edible yeast, herb, bark, bud, root, leaf or similar plant material, meat, seafood, poultry, eggs, dairy products, or fermentation products thereof, whose significant function in food is flavoring rather than nutritional.”

Making natural flavors

“One of the more-popular methods of natural flavor component production is distillation of essential oils,” says Ed Krutal, manager of flavor development, Robertet Flavors Inc., Piscataway, NJ. “With this process, the essential oils from a plant are recovered by distilling and collecting the volatile components using heat.

“Another common process is referred to as cold pressing, or extracting, where the volatile portion of a plant, typically citrus fruits, can be collected by mechanically squeezing the components from either the peels or pulp of the fruit,” continues Krutal. “With some raw materials, fermentation techniques are employed. In this process, ingredients are formed by microorganisms and yeasts, resulting in desirable flavoring components. Natural enzymes can also be used as catalysts to form high-impact aroma chemicals from various plants.”

A different approach is used when sourcing savory flavors. “Savory-type flavors such as chicken and meat can be formed under controlled conditions by selecting precursors normally found in these foods and thermally reacting them in a pressurized vessel at elevated temperatures,” says Krutal.

“Most of the time, all of these individual natural aromatic components are assembled in a particular order to simulate the desired food item,” says Krutal. “In short, it can be compared to assembling an aromatic jigsaw puzzle comprised of many components to get the final picture.”

Labeling requirements

“There are basically two ways of labeling natural flavors at the industrial level,” says Simon Poppelsdorf, vice president of research and development for flavors, Bell Flavors & Fragrances, Northbrook, IL. “Let’s take mandarin, for example. One way to label it is ‘mandarin flavor, natural,’ and

the other is 'mandarin flavor WONF, natural.' In the first case, all flavor ingredients are solely derived from mandarin, whereas in the second case, WONF stands for 'with other natural flavors.'"

Steve Wolf, director of flavor applications, Robertet, adds: "If a flavor manufacturer calls the natural flavor Macintosh apple, then Macintosh apple components must be part of the natural flavor. Further, if 'WONF' is not declared, then the natural flavor must be 100% 'from the named fruit,' an attribute abbreviated as 'FTNF.'" Both of these scenarios exclude the solvent.

"We've recently introduced a natural signature citrus flavor line that comes very close to specific fruit varieties, but are not 100% FTNF," Wolf adds. He also notes that his company has been seeing interest in a new line of nectar flavors. "Nectars are particularly beloved by Hispanics, but the fruits are flavors everyone loves, such as apricot, mango, pear and peach," he says.

"Natural flavors are used to impart or simulate a taste characteristic of choice, to modify a flavor that is already present, to maintain the flavor character after processing or to mask some undesirable flavor to increase consumer acceptance," says Chris Williams, chief flavorist, WILD Flavors, Inc., Erlanger, KY. "For example, instead of adding açai juice to a dairy beverage, a natural açai WONF could be added, which consists of açai extracts and natural aroma materials to mimic açai taste. A flavor is preferred, because the overall taste nuance can be adjusted—fresh versus fruity, versus jammy or cooked. The flavor also allows for an increased shelf life, provides ease of use and decreases cost."

When it comes to savory natural flavors, food formulators have long recognized the umami-enhancing power of naturally brewed soy sauce. "Soy sauce is one of the world's original natural flavors," says Andrew Hunter, chef, foodservice and industrial, Kikkoman Sales USA, Inc., San Francisco. The company has developed a natural flavor enhancer available in both liquid and powdered forms. Made in much the same way as soy sauce, it has a less-pronounced soy-sauce flavor and color.

"We use North American-sourced wheat, soybeans, water and salt," says Hunter. "Natural fermentation liberates several amino acids responsible for umami richness, including high levels of glutamic acid. Then, through a proprietary process, we reduce the soy-sauce flavor, aroma and color to create a pale-golden, cuisine-neutral, natural flavor enhancer that works with foods of any cuisine—and even many sweet applications, such as apple pie."

Because it contains the allergen soy, the ingredient must be noted as "naturally brewed soy sauce" on the label.

Like other natural flavors, the solvent need not be declared. "This natural flavor enhancer relies on an alcohol solvent, which not only diminishes soy flavor, it has the functional role of enhancing other flavors in a given application," says Hunter.

When formulating a natural flavor, it is helpful to know the application in order to pick the most-desirable solvent. "The purpose of the solvent portion of a flavor is to keep the flavor materials in solution. It also acts as a strength regulator—the greater the solvent, the weaker the flavor," says

Williams. “Solvents can inhibit chemical reactions, act as a preservative, determine the physical form (liquid, powder, emulsion, paste, etc.) and determine solubility.”

Krutal adds: “Most flavor concentrates can be added to either a water-soluble or oil-soluble solvent, depending on the end use. Also, at times, co-solvents are used to ‘bridge’ certain chemicals together that may not be soluble in any one particular solvent that is being used for the flavor being developed.”

In the end, natural and artificial flavors are similar in terms of available forms, usage and shelf life. “However, overall, natural flavors do cost more than artificial flavors, but our core suppliers have done a fabulous job of sourcing their raw materials and optimizing their production methods to consistently decrease the cost of natural aroma materials over time,” says Williams.

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