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Is The Snack Segment The Next Frontier for Experimental Flavor Formulation?



The snack aisle is more colorful than ever, and it looks like innovation is bountiful when incorporating spice in every bite.

Every trip I take to the grocery store I'm sure to spend just a few extra moments in the snack aisle, specifically to marvel at the lineup of chip flavors. I've found myself bringing home a bag nearly every week of a freshly released flavor to "taste test." Last week I was introduced to the Baja Fiery Mango Doritos. Spice in the snack aisle is no surprise, as heat has been on the rise for consumer demands throughout 2024.

In a report by Spate, an AI solution for finding the next big consumer trend in food and beauty, reads, "Through the prevailing wisdom of many countries, the United States has diversified its spicy foods. From spicy dill pickle chips to chili crisp and gochugaru, U.S. consumers are increasingly exploring the world through their spice tolerance."

But this nuance of "sweet heat" or even mixing fruity notes with heat has me quite intrigued and is a personal favorite. Selfishly I needed an expert to explain the phenomenon at the upcoming *Flavorcon* 2024 in Atlantic City, New Jersey, scheduled for October 8-9.

The session, "Swicy: The Fusion of Hot and Sweet" will be led by Kalsec principal flavor chemist Shane McDonald, Ph.D., who will dig into why consumers are enjoying the combination of sweet flavors and foods with hot, pungent spices, called "swicy." This presentation is set to look at market trends in the snacking segment, recent examples of swicy in new product and menus, pungent raw materials, as well as advice from chefs in combining sweet and pungent to make exciting new food and flavor sensations.

Spate Beauty Strategy & Innovation manager, Addison Cain, is also set to take the Flavorcon stage to break down flavor trends experiencing growth on social media and potential white space for brands/creators.

Hungry for more innovation on the menu at *Flavorcon* 2024? Visit *www.flavorcon.com* to claim your seat at the table. More information on the event, speakers, sessions and an expo hall sneak peek on **page 48**. See you in Atlantic City this October!



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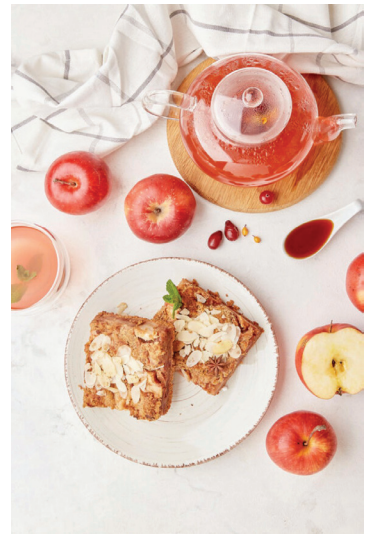


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Cinnamyl isovalerate (FEMA# 2302, CAS# 140-27-2) has a complex flavor profile that can be described uniquely depending on the concentration. The most prominent aspect would be fruity. It can best be described as pear, apple, grape, blueberry, pineapple, and sometimes even melon. This makes for a key ingredient in fruity beverage flavors. On the sweet side, cinnamyl isovalerate can add pleasant sweetness to the overall flavor profile of a product. Some may perceive subtle spicy characters reminiscent of cinnamon or clove. Overall, cinnamyl isovalerate adds a fruity and sweet dimension with potential hints of spice and other complexities depending on the amount used. Avant Organics provides this material as EU Natural, Kosher, non-GMO and Halal. For your free sample please email info@avantorganics.com.



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https://www.gourmet-ingredients.nl/en/smoked-onion-concentrate

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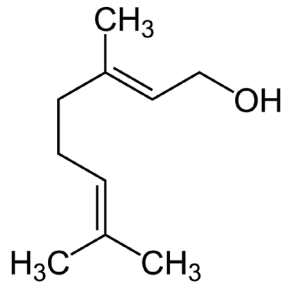
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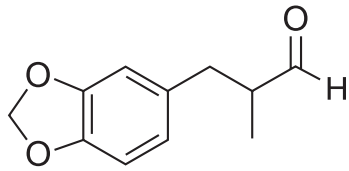
Natural Geranoil (FEMA# 2507, CAS# 106-24-1) is used to enrich the profile of floral-type fragrances, especially roses. Often included to bring liveliness to the fragrance creation of peony, sweet pea and white-pink type of flowers. Odor characteristics include rosy, sweet, citrusy, light floral and fresh green.



Floramelon

Hangzhou Grascent Co., Ltd

www.hangzhougrascent.com



Floramelon (FEMA# 4599, CAS# 1205-17-0) features a fresh floral odor with melon top-note. Its applications include fine fragrance, personal care, fabric care and home care. The recommended use level is up to 10%.



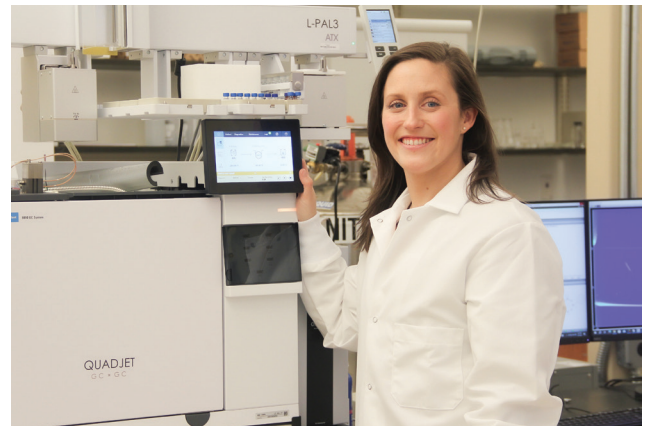


Spray Dried Mint Powder

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www.hindustanmint.com/spray-dried-products

This spray-dried powder (CAS# 8006-90-4) made from encapsulated mint oil, preserves the mint's flavor. Commonly used in food and flavor applications for its concentrated taste, it offers easy storage, consistent quality and water solubility. The free-flowing powder has a cooling minty flavor and off-white appearance.



Pegasus BTX 4D Promotion

LECO Corporation

https://www.leco.com/news/congratulations-dr-kate/

After carefully reviewing hundreds of entries from hopeful labs around the United States, LECO Corporation has selected Kate Perrault Uptmor, Ph.D., as the recipient of a brand-new LECO Pegasus BTX 4D with Paradigm™ Flow Modulator from our annual promotional program! Read more at *https://www.leco.com/news/congratulations-dr-kate/*.

Natural *trans*-2-*trans*-4-Hexadienal

Natural Advantage

www.natadv.com

Natural Advantage introduces natural *trans*-2-*trans*-4-hexadienal (FEMA# 3429, CAS# 142-83-6). The taste of natural *trans*-2-*trans*-4-hexadienal can be described as sweet and green, with dragonfruit and fresh melon nuances. It occurs naturally in dill, grape, guava, peas, strawberry, tea and tomato. *trans*-2-*trans*-4-Hexadienal can be used in various fruit flavors such as cherry, apple, dragonfruit and other tropical flavors. Use at 0.01 ppm–1 ppm as consumed. EU and U.S. Natural. Kosher, vegetarian and non-GMO.

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Robertet & Artefact Launch NaturIA Project, Generative AI to Enhances the Art of Perfumery and Flavoring



The NaturIA Project is designed to allow Robertet to offer innovative creations faster and better adapted to the project by increasing the creativity of its perfumers and flavorists tenfold.

Robertet has announced a partnership with Artefact, a European specialist in artificial intelligence (AI), to launch the NaturIA project: generative AI that is said to "revolutionize creativity and enhances the art of perfumery and flavoring."

The NaturIA project's first creation is a new yogurt flavor designed using AI for a major food industry group.

How NatrurIA Works

The technology is said to combine the testing phases of perfumers and flavorists with advanced generative AI algorithms to accelerate the creative process. It translates image briefs into detailed, evocative descriptions and then into search criteria to find existing formulas or suggest new fragrance and flavor combinations.

The technology is designed to enable Robertet to offer innovative creations faster and better adapted to the project by increasing the creativity of its perfumers and flavorists tenfold.

Jérôme Bruhat, CEO of Robertet, commented, "We are delighted to present the Robertet NaturIA project, developed with Artefact, which marks a turning point in our industry. This project illustrates how artificial intelligence can stimulate our creativity through technological innovation, while respecting the freedom and know-how of our designers. At Robertet, we continue to invent the natural of tomorrow."

Vincent Luciani, CEO of Artefact, said, "We are very proud of this collaboration with Robertet, which allows us to push the boundaries of creativity. This co-creation of a new yogurt flavor once again demonstrates the immense potential and tangibility of artificial intelligence at the heart of our daily lives."

p&f+

Courtesy of Ronertet

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Accepting Applications: The 15th Edition of Giract European Ph.D. in Flavor Research Awards



Six students have the opportunity to visit the laboratory of certain sponsor companies during the second year of their Ph.D. studies.

Courtesy of Accepting Applications

The Giract European Ph.D. in Flavor Research Awards is now in its 15th edition, aimed to raise awareness of the industry and career opportunities in order to increase the flavor research talent pool in Europe.

This fifteenth edition is organized by Giract, in coordination with Andrea Cattaruzza, director of AndCat Ltd. and professor Emeritus Andy Taylor of the University of Nottingham, UK.

Six first-year Ph.D. students are eligible to win a bursary of EUR 3,000, each. Additionally, these six students have the opportunity of visiting the laboratory of certain sponsor companies during the second year of their Ph.D. studies, by using a part of their winning bursary amount for their travel and stay. This will enable them to obtain a first-hand view of an industry R&D center.

One final-year Ph.D. student is eligible to win an award of EUR 5,000. The winner will also be invited to the Savory Flavor and Food Industry Conference to be held in Geneva, Switzerland, as a platform for the winning student to present his/her work to 'potential employers.'

The application deadline is October 31, 2024.

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Visit *https://giract.com/flavor-research-programme.php* for eligibility details and how to apply.

Aurochemicals Implements 24 Innovative Efficiencies Across Manufacturing & Infrastructure

Aurochemicals, a manufacturer of natural aroma ingredients, has implemented two dozen innovative efficiencies designed to enhance the company's safety, quality, product assurance, customer experiences as well as cost-efficiency.

The initiatives are said to span areas from Aurochemicals' manufacturing/production center to its information-technology infrastructure, from the mind of CEO Deo Persaud's and his extensive blended background in research, operations, chemistry and executive leadership, and his knowledge of hands-on skills such as engineering modifications and designs.



A top accomplishment, according to CEO Deo Persaud is expanding the Aurochemicals.com Document Center, adding 15,000 informational regulatory documents (now 21,700 documents overall).

"Aurochemicals has long prided itself on extreme efficiency, a robust record of innovation and our ability to successfully and continually manage change," Persaud said. "We prioritize strategic transformation rooted in, and advances, superb quality and value for our customers. That philosophy has been the driving force for breaking new ground and fine-tuning previously implemented improvements to capture even greater successes."

A top accomplishment, according to Persaud is expanding the Aurochemicals.com Document Center, adding 15,000 informational regulatory documents (now 21,700 documents overall) about its 649 products, which provides a 24/7 library that is searchable and downloadable.

"This database," Persaud said, "has proven to be a vital repository for Aurochemicals' valued customers who no longer have to directly contact Aurochemicals with requests. The documents outline how Aurochemicals develops and manufactures each product. They include chemical-origin statements, nutritional information, organic-compliance statements, safety data sheets, product specifications and more."

Examples of efficiencies include:

- Installation of a drum "massager" to soften and add flexibility to product containers before use, enabling their capacity and handling to be maximized.
- Introducing the use of tablets to track daily inspections in real time on the warehouse floor.
- Installation of a bag conditioner to break up lumps in bulk bags and increase production efficiency.
- Installation of an explosion-proof dust-filtration system to aid safety and quality.
- Creating a centralized "one stop" work station outfitted with a variety of tools, eliminating the need for employees to visit multiple warehouse areas to complete a single task.

Aurochemicals is now working on 300 potential new products while continually auditing its operations to identify potential improvements.

p&f+

Courtesy of Aurochemicals

Givaudan x Le Château du Clos Lucé Create "Leonard de Vinci et les parfums à la Renaissance" Exhibition

Givaudan partnered with Le Château du Clos Lucé for the "Leonard de Vinci et les parfums à la Renaissance" exhibition. In close collaboration with the event's curators, Givaudan perfumers have created 28 fragrances to be showcased throughout the olfactory experience, designed to offer visitors a unique multisensory experience filled with history, sensation, and emotion with scents defining the Renaissance period.

The exhibition showcases exclusive fragrances developed by Givaudan perfumers including Calice Becker, Shyamala Maisondieu, Nadège le Garlantezec, Rodrigo Flores Roux and Andréa Montanari.

Gilles Andrier, chief executive officer of Givaudan, commented, "At Givaudan, we consider historic conservation to be of the utmost importance. With a focus on olfactory expertise and collective heritage, visitors are invited to uncover more about the fascinating Leonardo de Vinci as well as the enchanting world of perfumes. It should come as little surprise that Givaudan agreed to associate its know-how with this major exhibition, the first of its kind, by creating twenty-eight olfactory illustrations."

Nadège Le Garlantezec, Givaudan perfumer, said, "Participating in this exhibition and contributing to the preservation of the history of perfumery is truly an honor. The Renaissance era offers an infinite fountain of inspiration to a perfumer."

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Givaudan perfumers have created 28 fragrances to be showcased throughout the olfactory experience, designed to offer visitors a unique multisensory experience.

Courtesy of Givaudan

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Palette Naturals founder and creative director Miriam L. Vareldzis has debuted a passion project that goes beyond scent, Creative Intuitive Perfumery. The program offers Soul Essence Sessions which consists of Intuitive Reading + Custom Perfumery as well as Energetics of Scent Fragrance Training.

Perfumer & Flavorist+ connected with Vareldzis to discuss the catalyst for creating Creative Intuitive Perfumery, the user experience and it's place in the fragrance industry.

What was the catalyst for this endeavor?

MV: Honestly, it's the culmination of my lifelong curiosity and interest in metaphysics/energy healing/intuition and my love and career in perfumery/fragrance.

Two years ago I started studying with a Tarot teacher here in Tucson, [Arizona], and over the course of that year, my intuition just blossomed. I guess I connected the dots and wove together the "intuitive arts" with my love of perfumery, using the Palette Naturals Accords. There are 22 Major Arcana in the Tarot, and I have 22 Accords in the Palette Naturals Collection. (Two have not been launched to the public yet). I find that interesting since I didn't set out to do that. That year I also started exploring stones and crystals that resonate with each accord, and assigned a color (energy) to each one. It sort of all came



Palette Naturals founder and creative director Miriam L. Vareldzis

Courtesy of Palette Naturals

together to combine an intuitive reading with creating a custom scent that supports the Energy of the Tarot guidance for the client. The scents are 100% natural.

What do you hope it will bring to the fragrance industry?

MV: I have two offerings on the site as of now: The Soul Essence Session, and The Energetics of Scent Fragrance Training.

Already, the Energetics of Scent training has gathered momentum for indie perfumers, and people who want to work with scent but learn MORE about the energy of the scents for other reasons than just olfaction. There is such a yearning for balance, harmony, grounding, clearing, etc., and scent is a way to support those energy shifts. It can be through a direct perfume or a blend within a product line. So to answer your question, if the industry actually wants to support the brands who are offering these types of products and making these claims, they actually need to know the energetic effects of scents on energy centers of the body! Perfumers can learn the language of the energy body and create their formula from a new viewpoint.

What can a user expect to experience?

MV: There are so many levels that connect intuition, energy (energetics) and scent.

For the Soul Essence Session, the experience is very personal and moving. It literally is a one-on-one intuitive reading, via Tarot and other oracle cards, and then the creation of a scent to support the energy of the session. Lots of conversation at first, to really get at the heart of the client's core question, where they would like support, guidance, or clarity. It is a co-creation, but I am offering insight and guidance for their topic.

For the Energetics of Scent Training, it's a 4-hour intensive session of smelling and training to sense and feel the connection to the energy body. It's beyond olfactive.

I offer a Tarot reading, sometimes just one card or Three if we have more time for these as well. Clients usually want to know more about themselves since they are learning this information for a new venture or direction they are taking their careers.

Either way, the experience is personal, transformative, insightful, fun, and new for (most) everyone.

How can those interested get involved?

MV: The easiest thing is to take a look at the website (*www.creativeintuitiveperfumery.com*) and then to simply reach out.

I'm keeping it relatively easy, non-corporate and personal. People can feel free to email via the site or give a call. All sessions can be in person (Tucson, Arizona, USA) or via Zoom.

p&f+

TOSLA Nutricosmetics Collaborates With Foodpairing AI to Enhance Flavor Technology

TOSLA Nutricosmetics is collaborating with Foodpairing AI, which will enhance TOSLA's patented Velious flavor technology.

TOSLA relies on Foodpairing's advanced flavor profiling capabilities to elevate the sensory experience. This synergy is said to offer unparalleled flavor profiles that enhance consumer enjoyment and satisfaction, crucial factors in driving higher repurchase rates and building brand loyalty.

Uroš Gotar, chief innovation officer at TOSLA, said, "In the world of nutricosmetics, flavor is the missing element that has often been overlooked. By leveraging Foodpairing AI's expertise with our VELIOUS™ technology, we are addressing a critical aspect of consumer satisfaction: taste. This collaboration is a breakthrough for TOSLA and our clients, as it ensures our products not only deliver on their beauty and wellness promises but also delight the palate. This innovation will significantly boost our clients' retention strategies, as superior taste is crucial in forming lasting consumer habits."

p&f+



The partnership will create flavor profiles that enhance consumer enjoyment and satisfaction, crucial factors in driving higher repurchase rates and building brand loyalty.

Courtesy of TOSLA Nutricosmetics

PROFILES:

REBECCA GENOVISE

The flavor chemist explains, "I didn't find the flavor industry, the flavor industry found me."

***Perfumer & Flavorist+* [*P&F+*]: What led you to the flavor industry?**

Rebecca Genovise [RG]: I didn't find the flavor industry, the flavor industry found me. In my search to find a career that bridged my backgrounds of food, nutrition, and chemistry, a summer internship program with a flavor house fell in my lap. I spent the summer testing flavors in various bar applications and became inspired by the smart, competent, and creative flavorists I worked with daily. My career aspirations to be a flavorist materialized and I continued to follow my passions of working in a scientific, yet artistic field.

***P&F+*: What applications do you primarily formulate for? Has this changed since you first began your career?**

RG: I currently work on almost all sweet flavor applications which range from confections to baked goods to ready-to-drink beverages; however, a large focus is formulating for alcoholic beverages. This has shifted somewhat throughout my career. I've been extremely fortunate enough to have created for (what seems to be) everything, but I spent many years focusing on protein bars and performance nutrition products.

***P&F+*: What are some of the current trends that are exciting you at the moment?**

RG: As someone who likes to travel, and is also driven by food, I love that global flavors are making an appearance at local levels. I like that we can get a teaser of the flavors used in different cultures and cuisines without having to travel great distances.

Another trend is the emergence of imaginative and fanciful flavored products. It's interesting to see consumer acceptance of concepts that are not always black and white and require them to suspend disbelief for that unique taste experience.

***P&F+*: Any advice for people coming into the flavor industry?**

RG: There are a lot of complexities in our field, so I think it is important to ask questions and take the initiative to learn, whether it's through a mentor or carving out time to self-teach. Once you have a solid foundation, then harness the passion you have for flavors and allow that to drive your creativity.



Name: Rebecca Genovise

Title: Flavor Chemist, Synergy Flavors

Location: Wauconda, Illinois (Chicago)

***P&F+*: Are the types of projects you're working on changing over time? How are the creative demands of the job evolving?**

RG: I've always worked on both innovation and duplication projects, but the type of innovation requests has certainly evolved. With the influence of social media's global reach, the average consumer is able to tap into global markets and have new taste preferences. This translates to new demand for flavors that the U.S. markets haven't yet experienced. Developing flavors to meet these needs has allowed flavor chemists the ability to explore their creative depths and discover novel, unique and inventive profiles.

p&f+

Courtesy of Rebecca Genovise

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JÉRÔME DI MARINO

Never-ending growth inspires this perfumer, “The fragrance industry is a rich world and as a perfumer, you never stop learning, even after years working in the industry.”

***Perfumer & Flavorist+* [*P&F+*]: What led you to the fragrance industry?**

Jérôme Di Marino [JDM]: When I was young, I was already a creative teenager, I used to spend hours and hours drawing, it has always been a way to escape from the rest.

I was dreaming about incorporating an art school but wasn’t confident enough about my skills. So I picked up a safer option studying sciences and chemistry.

As I was doing my studies in the south of France I discovered by chance the existence of the perfumers, because of Grasse proximity’s and local fragrance providers located there.

I have been instantly fascinated about it, that’s how I went back to my creative aspirations and the will to be a perfumer became evident.

A few years later I joined ISIPCA (the perfumery school founded by the Guerlain family) and started my first steps into the fragrance world. I am now passionate about fragrances, and I am grateful to take part in this creative journey offering to so many people a piece of dream through fragrances.



Name: Jérôme Di Marino

Title: Perfumer, Mane

Location: Barcelona, Spain

Courtesy of Mane



***P&F+*: What are some of the current trends that are exciting you at the moment?**

JDM: I am thrilled about the trend around fragrances and emotions. Global consumers are interested in fragrances that provide emotional or physical benefits. We have seen a strong interest in the well-being market as fragrances have the power to influence mood and behavior, provoking chemical reactions in your brain. Understanding the importance of emotions in fragrances is becoming crucial for brands to create products that resonate with consumers' desires. That's why Mane developed Wellmotion[a] in partnership with CNRS, a new tool that perfumers can use to measure a score of the emotional impact of a fragrance.

***P&F+*: Are there any formulations you would consider timeless? Why?**

JDM: I do believe that creating short formulas or overdosing raw materials makes a fragrance more recognizable and timeless. That a strong accord is key to making a fragrance stand out within a large amount of new launches year after year. A caricatural way of crafting a fragrance makes it more easily understandable to a larger audience. Everybody could recognize a Picasso by looking at its caricatural shapes. I think that one of the best examples of it is Baccarat Rouge from MFK, the formula is short, and it delivers a strong message. It has gone from a HIT fragrance to a timeless pillar already and will surely last for decades in the panorama of perfumes.

[a]Wellmotion is a trademark of Mane

***P&F+*: Any advice for people coming into perfumery?**

The fragrance industry is a rich world and as a perfumer, you never stop learning, even after years working in the industry. Every new project is a Blank page. That's a perpetual work on your creative process, on your knowledge and on your skills. Being passionate is the most important asset but patience and resilience are key to keep it untouched.

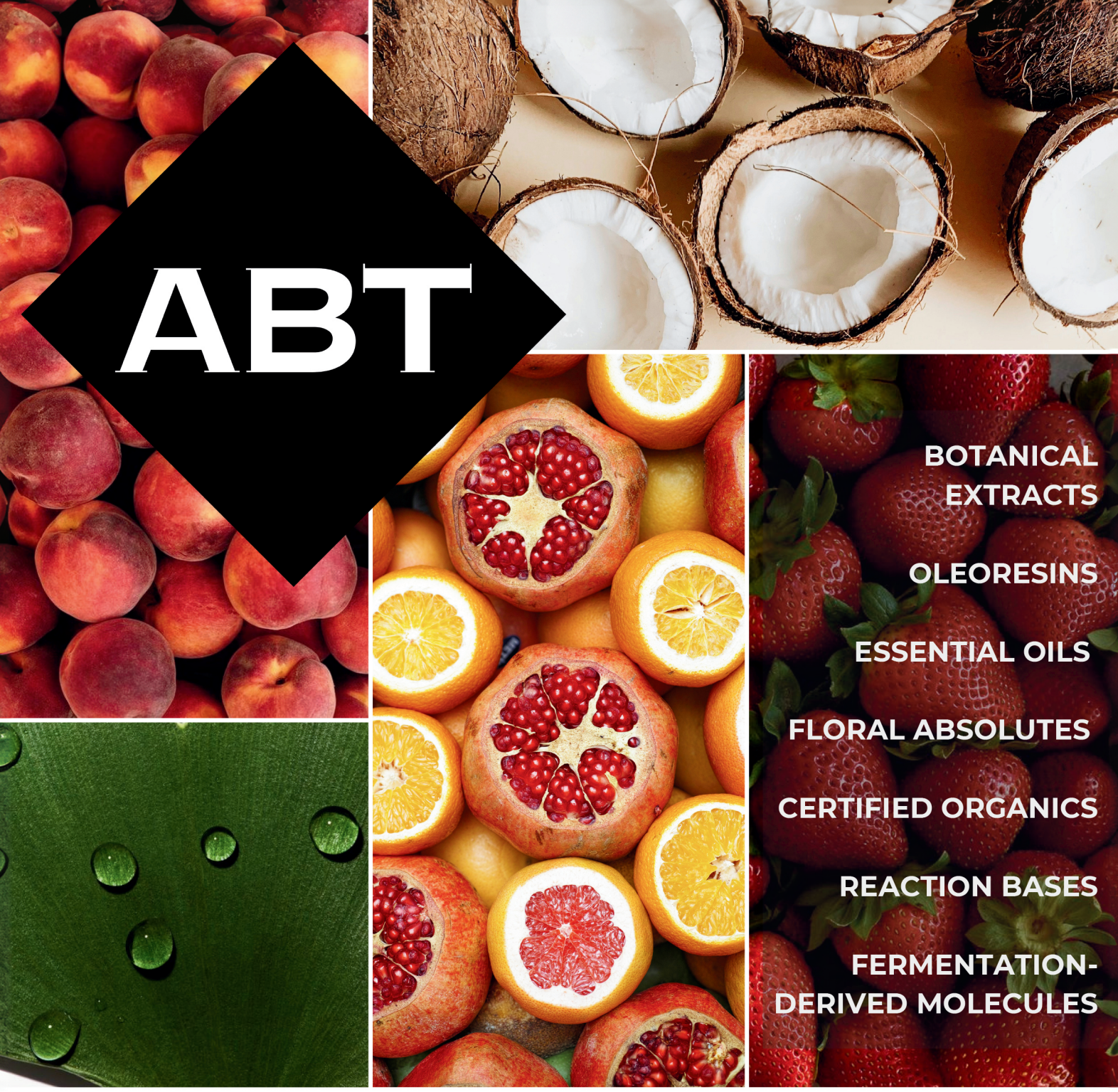
***P&F+*: Are the types of projects you're working on changing over time? How are the creative demands of the job evolving?**

JDM: The world of fragrances has been highly influenced these last few years by a high increase in exclusive brands. These brands are exploring new olfactive fields and are breaking with the standards of what a HIT fragrance has to smell. We have seen the emergence of alternative ways of crafting fragrances but also new canals to communicate about them. This trend has been enhanced by strong fragrance communities on TikTok or Instagram. Where the younger generation is sharing reviews, comments, or tips about fragrances…looking for an experience through fragrances, switching from a perfume to the other and making it more playful too. That's how an almost unknown fragrance can suddenly become the most desirable one in an impressively short period of time.

It led to a premiumization of the fragrance launches we worked on but also offered us a limitless creative playground, leading to a spontaneous and authentic way of creating. As a perfumer, it pushes me to go further in the search for new creative concepts or unexpected olfactive combinations.

p&f+





ADVANCED BIOTECH

Flavor and Fragrance Ingredients

Advanced Biotech is dedicated to producing the highest quality flavor and fragrance ingredients that inspire and captivate the senses. Our extensive portfolio, comprising of natural, synthetic, and fermentation-derived molecules, is constantly evolving to meet the changing demands of our valued clients. Utilizing proprietary production methods and a customer-centric approach, we are committed to delivering exceptional ingredients that elevate formulations.

INSPIRED BY NATURE



The nutty aspect of 3-octen-2-one reinforces an attractive aspect of the peach skin character.



BY JOHN WRIGHT
johnwrightflavorist@gmail.com

FLAVOR BITES:
3-Octen-2-one in Nut, Savory, Fruit, Brown & Other Flavors

See how 3-octen-2-one can be used successfully in a very wide range of flavors way beyond the obvious nut category.

3-Oct-en-2-one (FEMA#: 3416, CAS#: 1669-44-9) is a bright, high impact, nutty character with a mild associated fruity note. It can be used successfully in a very wide range of flavors way beyond the obvious nut category. It is especially useful in the savory category, adding an extra layer to their profiles.

Note that the dose rates given throughout this article are the levels suggested for use in flavors intended to be dosed at 0.05% in ready-to-drink beverages or in a simple bouillon.

Nut Flavors

Almond: Realistic almond flavors can use 3-octen-2-one at a variety of levels, but 50 ppm is typical.

Hazelnut: Nut flavors are often thin and simplistic. 3-Octen-2-one adds realistic nut character and a pleasant fruity complexity. One hundred ppm is a good initial level

Image by Visual Background at Adobe Stock

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Peanut: Similar levels of use, around 100 ppm, are equally useful in peanut and peanut butter flavors, enhancing the nutty notes and adding realism and complexity.

Pecan: This also applies to pecan flavors, where 100 ppm is again ideal.

Pistachio: The effect in pistachio flavors is analogous to that in almonds and the ideal level of use is also around 50 ppm.

Walnut: This ingredient is also ideal for walnut flavors, and levels can be higher, ranging up to 300 ppm.

Savory Flavors

Asparagus: Asparagus flavors are a small, but interesting category. They can tend to be a little one dimensional and lack depth. Ten ppm of 3-octen-2-one goes some way towards rectifying the problem.

Beef, Roast: 3-Octen-2-one adds depth and realism to all types of beef flavors, from boiled to roast and barbequed. Widely varied levels of addition can work, starting at 200 ppm.

Chicken: The same applies to chicken flavors, working equally well with boiled and fried profiles. Levels of use can start at 100 ppm, but much higher levels, around 1,000 ppm, can also be very interesting in white meat flavors.

Ham, Pork and Bacon: One hundred ppm is a good level in a whole range of processed pork flavors, notably ham, bacon and chopped pork, adding to complexity and realism.

Lamb and Venison: 3-Octen-2-one adds interest and authenticity to both lamb and venison flavors at 100 ppm.

Mushroom: Equally relatively high levels, around 100 ppm, can also be used in all types of mushroom flavors, raw, dried or cooked, and of almost every variety of mushroom. Boletus or Cep type flavors benefit most from this ingredient.

Onion, Fried: 3-Octen-2-one adds very welcome complexity and authenticity to most onion flavors at levels in the region of 100 ppm. It is most effective when recreating the complex character of fried onions.

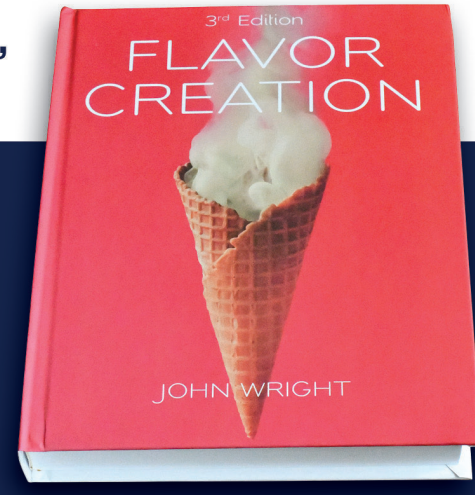
Peppers: All types of pepper flavors, especially bell pepper flavors can benefit from the addition of around 50 ppm of 3-octen-2-one. Higher levels can be effective in jalapeno flavors.

Click above to listen to this exclusive podcast.

JOHN WRIGHT'S FLAVOR CREATION,
Third Edition is now available!

Order the Third Edition now through Blurb
visit www.johnrwright.com for details

This must-have guide covers everything from flavor creation techniques and raw materials to end products and sensory science. Get your copy today!



Rice, Cooked: Cooked rice flavors often lack depth. A moderate addition, around 30 ppm, of 3-octen-2-one helps remedy this.

Seafood: 3-Octen-2-one can add depth to all flavors from the sea. One hundred ppm works well in oily fish flavors, such as salmon. Lower levels are better in shellfish flavors.

Fruit Flavors

Apple: Thirty ppm is a good starting level of addition of this ingredient in apple flavors. It remains in the background but adds authenticity.

Apricot: This chemical is found in nature in apricots Levels of use start at 50 ppm in lighter, floral style, flavors.

Banana: Banana flavors can often seem too simplistic and ester dominated. This ingredient adds an intriguing element to the fruity note but also adds complexity and realism. Levels of use start at 100 ppm.

Blueberry: 3-Octen-2-one performs well in blueberry flavors at quite low levels, typically 20 ppm.

Lime: Similar levels, around 20 ppm, work well in fresh lime flavors and also in both lemon flavors and in lemon lime blends.

Orange: Only trace amounts are needed to produce a significant effect in fresh orange juice flavors, in the region of 10 ppm.

Peach: The fruity note of 3-octen-2-one is especially well suited to peach flavors, where it adds significantly to the authenticity of the profile. The nutty aspect reinforces an attractive aspect of the peach skin character. Fifty ppm is an ideal starting level.

Plum: This is only a minor flavor category for most of the world but it can occasionally be interesting and 3-octen-2-one adds much needed authenticity. Ideal levels in plum flavors are quite low, in the region of 20 ppm.

Strawberry: 3-Octen-2-one is clearly not the dominant unsaturated ketone note in strawberry flavors but it can, nevertheless, exert a positive effect at a low level in blends with other unsaturated ketones at around 20 ppm.



Similar to honey flavors, adding around 10 ppm adds attractive complexity to pandan.



Up to 200 ppm of oct-3-en-2-one can boost aggressive green tea profiles.

Brown Flavors

Caramel: Caramel flavors gain complexity from the addition of around 100 ppm of this raw material.

Chocolate: Forty ppm of this ingredient is useful in all types of chocolate flavors. It is especially useful in the context of reinforcing the cocoa notes.

Sugar, Brown: Levels vary considerably in this category of flavors. Low levels, around 20 ppm, are effective in mild brown sugar flavors, but ten times as much boosts flavors with some burnt sugar character.

Tea: 3-Octen-2-one can work well in green and red tea flavors. Twenty ppm is ideal in black tea flavors, but up to 200 ppm can boost aggressive green tea profiles.

Vanilla: Fifty ppm of 3-octen-2-one in vanilla bean flavors has a significant positive effect, adding complexity and realism.

Other Flavors

Butter: Between 50 ppm and 100 ppm can also be useful in the context of both fresh and cooked butter flavors, adding complexity and depth to the dairy note.

Cereal: 3-Octen-2-one enhances all cereal flavors and adds depth. Two hundred ppm is an ideal level of addition.

Cream, Fresh: The effect of 3-octen-2-one in cream flavors is similar to that in butter flavors and the level, between 50 ppm and 100 ppm, is also similar.

Honey: The contribution of 3-octen-2-one to honey flavors is only modest, at around 10 ppm, but it adds attractive complexity.

Pandan: Similar comments, and a similar level (10 ppm), apply to the use of this ingredient in pandan flavors.

p&f+

From top: image by katobonsai; Ilgun at Adobe Stock

THIS MASTERPIECE REDEFINES THE WORLD OF FOOD AND BEVERAGES



THE OTHER IS JUST A JUICE PROCESSOR

GOURMET
INGREDIENTS
Shallots, Onions & Garlic

ONION IS A NATURAL TASTEMAKER, FLAVOUR, COLOUR AND SWEETENER. OUR SOLUTIONS COME IN VARIOUS FORMATS: FROM JUICE CONCENTRATE TO ESSENTIAL OIL.

Our onions, shallots & garlic are highly versatile and potent vegetables with much more under their layers then you might already know. That's why we turn them into 100% plant-based and naturally processed clean label ingredients for a wide range of applications. You can use them to create depth in savour, a pungent note, the right mouthfeel or the aturally sweetened version of your bestseller. Give your food and beverages an unmistakable taste signature. Our experts can help you with your formulation goals. Get in touch with us via our website.

Scan me!

INNOVATING SCENTED CANDLES WITH GREEN CHEMISTRY

The development of Augeo® solvent is the outcome of the all-around evaluation of natural content, sustainability, and performance.

SPONSORED BY SOLVAY

Green chemistry is a chemical concept that aims to reduce or eliminate the generation and application of environmentally harmful chemicals. In this context, developing green solvents has become increasingly important due to the global awareness of health and wellness that prioritizes sustainable and efficient solutions. Green solvent selection should meet three criteria: natural content, sustainability, and performance. Such criteria promote essential discussions as to what a green solvent is and how green is green enough, as well as other issues such as: Is a solvent green if it is 100% biobased yet presents toxicity to humans and the environment? Should the odor be accounted as one checking point for green solvent?



Augeo® is an innovative solution for the solvents used in the candle industry, allowing a more sustainable profile and tackling challenges.

The development of Augeo® solvent is the outcome of the all-around evaluation of these three criteria:

Augeo® is a non-toxic, readily biodegradable, LVP-VOC, colorless, odorless, transparent liquid with high solvency power. Augeo® is fully available to our customers worldwide and provides a competitive cost compared to petrochemical-based solvents.

As a global provider of high-performance and sustainable solutions, Solvay is proud to have invested time and resources to guarantee a 1.6 kgCO2e/kg net footprint (2.6 kgCO2e/kg as GWP and 1.0 kgCO2e/kg as biogenic content) for Augeo®. Also, a carbon-neutral version of Augeo® is under development to create sustainable shared value for suppliers, customers, and stakeholders.



Images courtesy of Solvay

Like the main air care applications, choosing the correct candle solvent is a key challenge to meeting the proper equilibrium between several desirable characteristics. One of the challenges for candle production is gourmand fragrance solubilization, as these compounds are generally crystalline and highly hydrophilic.

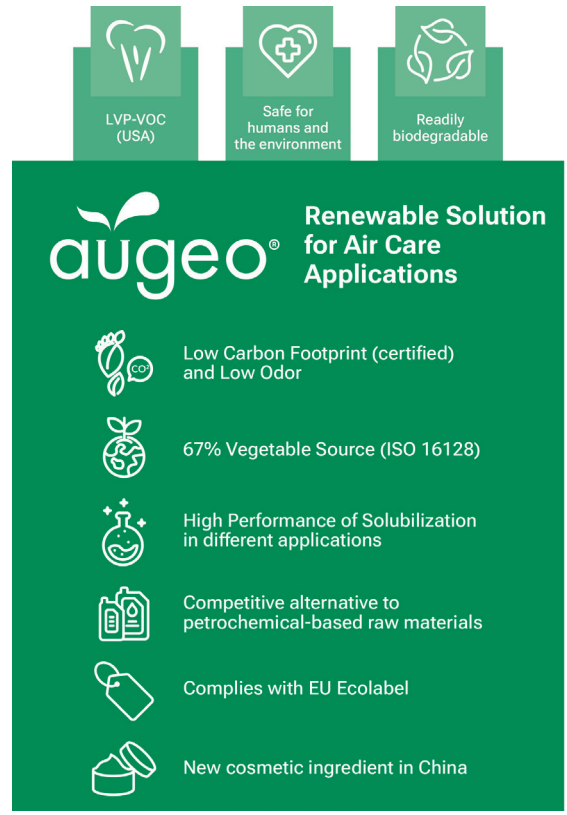
Augeo®'s polarity is established between benzyl benzoate (BB) and dipropylene glycol (DPG). Thus, special attributes include higher polar fragrance solubilization and adequate compatibility with paraffin/soy waxes.

Some gourmand fragrances are more susceptible to oxidation processes or color changes after solubilization. For this challenging requirement, Augeo® provides a lower yellowing after solubilization, keeping a lighter and more transparent solution. Color measurements show that Augeo® is capable of retaining initial wax color conditions after incorporating the fragrance and solvent into the wax. Conversely, BB solvent leads to a visually noticeable darker wax coloring.

Another challenge in candle formulation is obtaining an adequate olfactory profile. The solvent should have suitable volatility and other properties that bring the aroma out of the candle during the burn process or even before its usage as a scented wax. As the evaporation rate of Augeo® is higher than that of BB and isopropyl myristate (IPM), its application as a carrier can boost the fragrance blooming of the candle. Also, due to its low odor, Augeo® promotes the fragrance notes properly.

The burning of a candle raises extra concerns in terms of safety and appearance. Solvents containing aromatic rings, such as BB, may increase benzene, toluene, and xylene (BTX) emissions, introducing more toxic compounds into the indoor environment. As a non-aromatic solvent, Augeo® shall not produce such substances, promoting safer indoor air quality. Compared with conventional solvents, Augeo® screening tests show a reduction in soot generation, a source of indoor PM 2.5 with a potentially hazardous impact on human health, thus indicating an improvement in candle burning efficiency.





In addition to requiring safer gas emissions, desirable appearance qualities must also have special attention. A good candle should present a smooth surface, free of ashes, cracking, and reduced yellowing before, during, and after burning. Augeo® exhibits an adequate balance for all these characteristics compared to other petrochemical solvents.

Augeo® is an innovative solution for the solvents used in the candle industry, allowing a more sustainable profile and tackling challenges such as inefficient burning, inadequate flames, poor scent, soot generation, and toxic gas emissions. Augeo®, as a green solvent, has been demonstrated to be a green solution for candles, showcasing how innovation can drive green chemistry into the real world to solve the challenges of different industries.

Solvay Contacts: Victor Resende / Americas and Europe; PengFei Ji / APAC



Snacking is a way for consumers to infuse joy into their day, and people are willing to indulge more in treats with exquisite taste.

Image by stockbusters at Adobe Stock

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What Are Consumers Looking for in Snack Flavors & Functionality in 2024?

From specific cravings to general hunger, a need for energy to a desire for indulgence and adventure, consumers are integrating the concept of "snackification."

BY MIKE MEDINA, Global Marketing director, Savory, ADM



Mike Medina

Today's consumers are snacking more often: replacing breakfast or lunch, grabbing a healthy bite between meals, getting quick energy on the go and indulging in late-night snacks. In fact, 73% of United States consumers say they snack at least once a day[a]. This trend of all-day grazing, or "snackification," is increasing demand for better-for-you snacks that offer nutritional benefits from ingredients like fiber, protein and biotics in support of digestion, energy, satiety and more. Ongoing interest in overall well-being, weight management and the rising popularity of the use of glucagon-like peptide-1 (GLP-1) agonist solutions means people are snacking in a mindful way.

At the same time, enjoyment is elemental to the snackification trend. Flavor continues to come first, especially in foods with better-for-you ingredients or smaller serving sizes. Each bite is expected to have a pleasurable sensory impact with dimensional taste profiles and intriguing textures for a more gratifying snacking experience.

Back to Basics

Many shoppers believe their favorite snacks are a necessary indulgence. They take comfort in familiar, mainstream flavors and recognizable ingredients, like toasted almond and dark chocolate cereal bars, roasted sweet potato chips and caramelized onion crackers. Recognizable sweeteners from natural sources, including honey, dates and agave, offer delightful flavor and sweetness while also supporting clean label targets. Additionally, cheese notes are transcending the traditional cheddar with broader use of distinct varietals, such as parmesan, blue and brie, in snack applications ranging from dips to fillings to seasonings.

Kitchen pantry ingredients and wholesome inclusions contribute different textures, visual appeal and bolder flavors. Crunchy, seasoned chickpeas are having a moment as high-protein snacks, while nuts, seeds and multigrains are a fiber-rich staple in bars, crackers, clusters, trail mixes, granola bites and more. Lots of these familiar ingredients can also support more satiating food choices. A recent Mintel report finds that weight-conscious consumers seek to add products to their routine that target satiety effects[b], which is now being further influenced by on-trend GLP-1 agonists. Fiber from ancient grains, beans and pulses, along with prebiotic dietary fiber from other natural sources like corn starch, are gaining prominence, particularly as fiber is the number one ingredient consumers seek for reasons like satiety and weight management, in addition to digestive support[c].

Premium Snacks without the Price

Snacking is a way for consumers to infuse joy into their day, and people are willing to indulge more in treats with exquisite taste. However, affordability

[a] *https://store.mintel.com/us/report/us-snacking-motivations-and-attitudes-market-report/*

[b] *https://www.mintel.com/press-centre/mintel-announces-global-consumer-trends-for-2023/*

[c] ADM Outside Voice℠

concerns have many people monitoring their spending habits, even as they look for elevated sensory experiences and tailored functional offerings. Notably, of the 77% of global consumers who have recently reduced restaurant spending, 46% say they are buying more premium treats at home as a form of compensation[d].

Shoppers are also willing to pay for the perception of quality, and that's where the #dupe trend is making waves within the food and snacking sectors. Whether it's premium flavors in private label offerings or a more accessible version of a luxury brand, consumers are interested in upscale affordability. For example, rather than scooping up fresh caviar with a gourmet cracker, consumers may be satisfied with the umami element of roe-flavored puffs. Sophisticated flavor descriptors can also signal premiumization, such as espresso vs. coffee, limoncello vs. lemon, and truffle vs. chocolate. Other ways for consumers to save while splurging include bulk-style variety packs, bite-size versions of the original or pre-portioned servings, such as on-the-go pudding cups with an enhanced flavor and mouthfeel that more closely emulates luxurious French pots de crème.

Premiumization is also conveyed with specialty and limited-time offerings that provide an air of exclusivity. Beyond seasonal and holiday flavors (pink lemonade frosted cookies), think "mood food" concepts (mocha crisp energy bars) or co-branded promotions (snack mix with chile-lime tajin seasoning). Incorporating global flavors like tiramisu and churro, and botanical flavors like lavender and elderflower, also adds a premium perception to snacks. Consumers can enjoy the novelty of the snacks along with the perk of being in the know.

E-commerce & Exploration

Nearly half (48%) of U.S. consumers say they enjoy trying new-to-them snacks and flavors of snacks. Plus, about 4 in 5 consumers are actively seeking new and unusual flavors that challenge their sensory perceptions[e]. This desire may be partially influenced by what consumers are viewing on their screens – and what they can try at the tap of a button. As more direct-to-consumer sites pop up online, shoppers have greater access to flavors and formats that are typically harder to find on store shelves. The same is true of social media and its capacity to broaden awareness of regionally focused flavors.

[d]*https://fmcggurus.com/reports/fmcg-gurus-top-ten-trends-for-2024-global-report/*

[e]*https://fmcggurus.com/reports/fmcg-gurus-flavor-color-texture-in-emea-in-north-america-regional-report-2023/*



Consumers are looking to save while splurging by searching for bulk-style variety packs, bite-size versions of the original or pre-portioned servings.

Image by **Катерина Натірна** at Adobe Stock

Global influences can add complexity to one-note flavors, often with overlapping elements of spicy, sweet, salty, smoky and so on. Some notable innovations include chimichurri-flavored popcorn, mango yogurt with black sea salt, dried pineapple glazed with chamoy, and chocolate-covered strawberry mochi gummies. There's also continued interest in spice and new sources of hot(ter) flavors, like smoky Scotch bonnet chile queso chips. Innovative and nuanced flavor profiles up the enjoyment of the snacking experience.



Some notable innovations include chimichurri-flavored popcorn, mango yogurt with black sea salt, dried pineapple glazed with chamoy, and chocolate-covered strawberry mochi gummies.

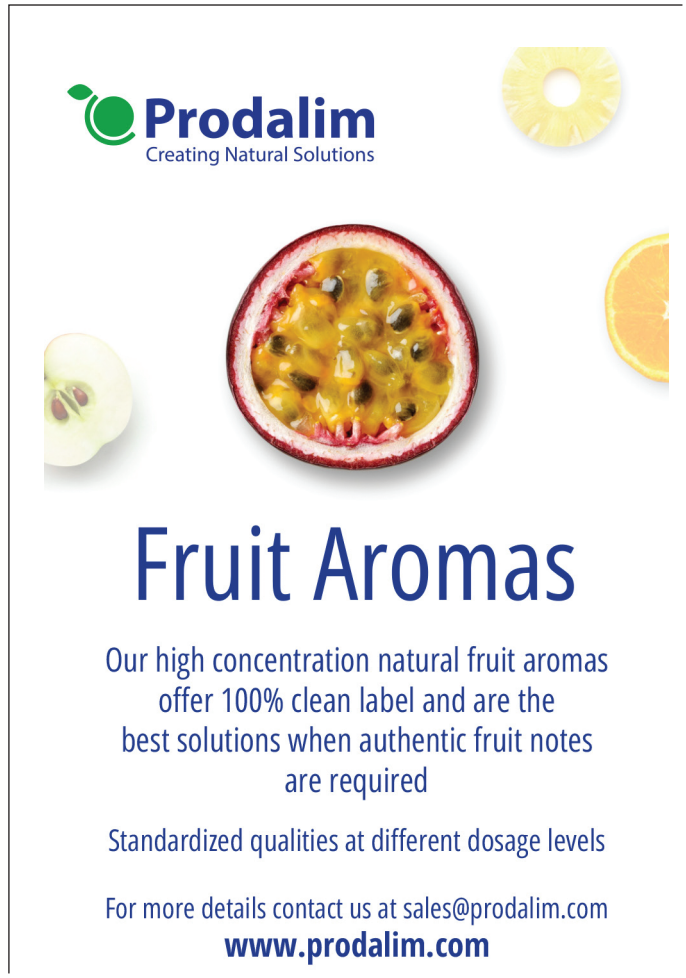
Plus, smaller portion sizes enable consumers to sample fun new flavors without committing to a complete meal. Mail-order snack boxes are gaining popularity while introducing subscribers to taste sensations from around the globe. For example, a box of treats from Thailand might deliver tempura-fried seaweed, sour spaghetti-style gummy candy, dried coconut flakes flavored like roasted sweetcorn, and sandwich cookies filled with custard cream. With a global pantry from which to choose and convenient delivery options, these subscription boxes are sure to keep the snackification trend going.

Satisfactory Snacking

As snacking has become further ingrained in daily behaviors, consumers have higher expectations for foods that not only meet baseline needs for taste, price and convenience but also support their lifestyle goals. This has opened the market to a broader range of snacks, from the familiar enjoyment of traditional chips and cookies to the nutritional benefits of health-forward puffs, bars and bites. The line between meals and snacks continues to blur, and flavorists have the exciting opportunity to create delicious treats that fuel both body and mind. Whether working on a new concept or transforming an existing favorite, finding a partner with the right portfolio, technical expertise and ingenuity will help brands develop snacks that satisfy consumers who want it all.

p&f+

Image by Kenishirotie at Adobe Stock



Kerry Tackles Salt Reduction in Trending Savory Snack Category

Discover consumer demands in the snack category, how the swicy phenomenon is winning consumer taste buds and how to incorporating salt reduction technologies.

SPONSORED BY KERRY

There's a clear trend towards bolder snacking, combining classic flavors with modern twists and a boost of health benefits.

Perfumer + Flavorist+ connects with Kerry vice president, Snacks, North America, John Kaufmann and global portfolio director, Tastesense™ Salt, Hugo Leclercq to discuss the evolving savory snack category.

Take a look at what's trending in the savory snack category, consumer demands in salt reduction and Kerry's flavor technologies that address formulation needs.



Kerry's deep understanding of salt interaction in snack seasoning formulations enables it to push the boundaries of sodium reduction, achieving reductions of over 60% in some applications.

According to Kerry research, what is trending in terms of flavors in the savory snack category?

John Kaufmann [JK]: Bold and smoky flavors, cheesy goodness, swicy (sweet and spicy) combinations, nostalgic twists, brand collaborations, and healthier options are among the top trends in the savory snack food market. There's a noticeable shift towards more adventurous snacking, blending traditional flavors with contemporary twists and adding a health kick.

Swicy is a term used to describe the combination of sweet and spicy flavors that are mashed together to appeal to consumers who enjoy both taste profiles. Products like fiery mango, recently launched by Doritos or chili lime.

Meals as flavors incorporate the flavors of popular meals into snack foods, a trend is driven by consumers' desire for more variety and novelty in their savory snacking options. Combining meal flavors into snacks can create a sense of familiarity and comfort for consumers who enjoy dishes like pizza, cheeseburgers, deli sandwiches and the like.

What are the current consumer demands in terms of their snack products?

JK: Consumers are looking for ways to make savory snacks work for their needs, which could mean adding protein, energy, or even immunity-boosting ingredients. This also involves reducing sodium without compromising flavor intensity. Adding Proactive Health to the equation, ingredients like Kerry's BC30 for immunity and digestive support while Kerry's Tastesense™ solutions can be leveraged to mask any off-notes associated with higher protein snacks, ensuring flavors remain bold and intense even with significantly reduced sodium or sugar.

Additionally, incorporating Dairy Taste into snacks like chips, popcorn, crackers, nuts, seeds, and extruded snacks will continue to drive traction. Brands are now focusing on meeting their sustainability goals by reducing carbon footprints through low-carbon dairy options with no impact on the eating experience. Kerry offers an extensive portfolio of dairy taste solutions, ranging from flavors to powders, which can be utilized to create delicious, sustainable products.

What are some of the challenges when creating savory snack products while meeting the consumer demand for salt reduction?

Hugo Leclercq [HL]: Reducing sodium intake in snacks is not only imperative for public health but also presents an opportunity for snack brands to meet the evolving consumer demand for healthier options. By understanding the impact of excessive sodium consumption, adhering to the new WHO recommendations, and implementing effective strategies, snack brands can contribute to a healthier and more sustainable snacking landscape.

However, brands are hesitant to push the boundaries on salt reduction. A major challenge in reducing sodium is recreating the initial taste impact of sodium chloride. Traditional salt alternatives and existing tools in the marketplace have struggled to replicate that comforting and iconic upfront salty taste you experience when you first crunch into a potato chip.

Kerry's deep understanding of salt interaction in snack seasoning formulations enables it to push the boundaries of sodium reduction, achieving reductions of over 60% in some applications. Tastesense™ Salt, available both as a standalone solution for salted crisps and as part of more complex snack seasoning formulations, is backed by robust science linking taste receptors with proprietary product chemistry, salt morphology, proteolysis and fermentation.

Kerry's proprietary in-house capabilities allow for the creation of multidimensional, novel taste ingredients from natural botanical extracts, peptides, and ferments (both yeast and non-yeast based), as well as various by-products from valorization streams. By working synergistically and leveraging cross-disciplinary knowledge, Kerry's flavor creation team and application experts can tackle challenging sodium reduction formulations, resulting in more sustainable, nutritious products that do not compromise on taste.

Can you share some of Kerry's flavor technologies that tap into the consumer demand for salt reduction in their savory snack products?

HL: Through our 360° profiling protocol, we have proven that our Tastesense™ Salt solutions enable snack seasoning brands to reformulate without sacrificing taste intensity. 360° profiling provides a comprehensive and unbiased understanding of how saltiness is perceived in complex foods. It allows us to evaluate salt intensity and flavor delivery throughout the entire eating experience, from the first bite to chewing. We wanted to investigate if our Tastesense™ Salt solutions enhance the overall flavor experience. It does.

Our research and development team collaborated with Sensory and Consumer Product Research to collect sensory data on Kerry's Tastesense™ Salt solutions in BBQ seasoned chips. We compared chips with reduced salt content (500 mg/100g) to a control with higher salt content (700 mg/100g). The results clearly demonstrate that Tastesense™ Salt provides a saltiness and flavor experience like the control, matching the upfront taste impact of salt almost exactly. Consumer sensory evaluations confirmed that our BBQ-seasoned chips with Tastesense™ Salt were equally liked compared to the control. Through our 360° profiling protocol, we have proven that our Tastesense™ Salt solutions enable snack seasoning brands to reformulate without sacrificing taste intensity.



Forward Thinking:
4 Trends Leading Innovation in Air Care

Discover the influence of sustainability, gourmand scents and interactive marketing in air care.

BY AMY MARKS-MCGEE, Trendincite LLC; amy@trendincite.com



Amy Marks-McGee

Custom Essence perfumer Ana Morales and marketing manager Nicole Oram note, "Gourmands continue to stay relevant and evolve based on consumer's preferences. Gen Z finds gourmand fragrances indulgent, comforting, and playful."

Image by Marina at Adobe Stock

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According to ResearchAndMarkets[a], the global candle market is estimated to reach a market size of approximately $15.11 billion by 2030, growing at a CAGR of 6.17% from 2024 to 2030. Candles of all shapes, sizes, colors, and scents are a mainstay. Gourmand candles both sweet and savory, many of which are collaborations, are on trend. Interactive scent marketing activations are engaging consumers while odor-neutralizing air care addresses malodors. Sustainable scents and designs continue to meet consumers' concerns for the environment. From mass to prestige, there is no shortage of scented candles and air care products on the market.

Sweet On Gourmand Candles

Vanilla-scented candles are top sellers and fruit scents are popular. These two directions have led the way in gourmand-scented candles. For example, Spates' data[b] showed Chocolate candles are trending with 3.7K average monthly searches, up 8.9% since last year and Cherry candles are on trend with 2.3K average monthly searches, a 27% increase. Custom Essence perfumer Ana Morales and marketing manager Nicole Oram note, "Gourmands continue to stay relevant and evolve based on consumer's preferences. Gen Z finds gourmand fragrances indulgent, comforting, and playful. The gourmand fragrance combinations are endless: creamy vanilla, salted pistachio, cotton candy, savory popcorn, and fruity sodas are just a few directions."

Gourmand scents influenced by popular sweets continue while coffee and fruity beverages are the latest muses. "Gourmand notes from pistachio to coffee counterbalance some of the unease and stress today's consumer is under. Pushing that even further we're seeing candied notes like cookie bits and fruit candy, it's gourmand in a more literal sense, but at the same time it's playful and nostalgic," states Kari Arienti, SVP, Creative Perfumery at Quintessence Fragrances Ltd.

Joya collaborated with chef Dominique Ansel on a unique bakery-inspired scent collection. The Joya x Dominique Ansel[AM3] Cronut® Molded Candle is a hyper-realistic candle that features fresh dough, natural rosewater, and vanilla bean accords. The Secret Recipe Poured Candle in a glass measuring container contains a fragrance that when unlit smells like raw batter or dough and when burning smells like baking dough. Also in the collection are four Natural Scented Birthday Candles: Eggnog (Holiday Edition), Honeysuckle Sugar, Salted Butterscotch, and Strawberry Milk. Joya Studio founder Frederick Bouchardy mentions, "The Cronut® candle is a bestseller that we struggle to keep in stock."

In London, Diptyque unveiled Maison Diptyque, a new store and immersive space named The Ephemeral Space and Heritage Gallery. The cultural space will be used for collaborations with a variety of artists. The first limited edition collaboration was with Café Verlet, a Parisian coffee and pastry bar. Introduced to the court of Louis XIV in the mid-17th century, Café Verlet served espresso, candied fruit, and tea. Inspired, Diptyque debuted four candles: Biscuit (Biscuit with cinnamon and patchouli), Café (Coffee), Chantilly (Whipped Cream), and Fruits Confits (Candied Fruit with candied plum, orange and patchouli). Celebrating 30 years of the TODAY Show, TODAY partnered with Homesick Candles. The TODAY x Homesick Sunrise candle was designed to capture the essence of the show and smells like a "morning cup of coffee." The fragrance is composed of espresso bean, brewed coffee, brick, caramel, steamed milk, vanilla bean, mocha, sugar cane, and heavy cream notes.

Crown Royal and FORVR Mood have teamed up on the limited-edition Crown Royal Blackberry x FORVR Mood Berry On Top candle with blackberry, whisky, and vanilla accords. Sparkling water brand Aura Bora received customer feedback that the brand's beverages "sound like a candle flavor." Leaning in, Aura Bora and P.F. Candle Co. collaborated on the limited edition Watermelon Chili beverage flavor inspired by P.F. Candle Co. Watermelon Chili candle. Australian candy brand Allen's owned by Nestlé collaborated with Dusk and released a lolly-inspired home fragrance range in

Click above to listen to this exclusive podcast.

[a] *https://www.perfumerflavorist.com/fragrance/home-care/news/22888079/global-candle-market-size-to-reach-1511b-by-2030*

[b] Spate U.S. Search from Jun 2023 to May 2024 vs. Jun 2022 to May 2023



Joya x Dominique Ansel's collaboration features a hyper-realistic Cronut® Molded Candle, Secret Recipe Poured Candle, and four Natural Scented Birthday Candles.

scented candles, bath bombs, room sprays, and fragrant oils. Inspired by the candy flavors, the scents include Frogs Alive, Peaches and Cream, Pineapple, Sherbies, and Cheekies.

Foodie - Savory Candles

Savory candle scents inspired by fast food began emerging in late 2019 as discussed in Trendincite's *Perfumer & Flavorist+*[c] "Forward Thinking: A Scented Home" article, which appeared in the September 2020 publication. Inspired by food and beverages, savory candles continue to emerge. "The new modern gourmand fragrances incorporate lighter and more whimsical notes like cotton candy, marshmallow, and bubblegum, evoking a sense of fun and wistfulness. Additionally, there is a growing trend toward blending these sweet notes with more complex and unexpected elements, such as tropical fruits, spiced accents, and even savory components like herbs and nuts," comments Ketrin Leka, Head of Perfumery & Fragrance Development at French Color & Fragrance Co. Australian brand Twisties Snacks and Angel Aromatics released two limited edition scented candles: Cheese and Chicken, in a twisted spiral shape. In honor of Burger King's 70th birthday, BK launched Flame Grilled Scented Birthday Candles. The description reads "With notes of char, smoke, and searing hot fire, these one-of-a-kind birthday candles turn any ordinary party into a savory celebration." Inspired by the Japanese condiment, Loewe's latest home scent launch is Wasabi. The "high-intensity" spicy fragrance is peppery, fresh and uplifting with savory notes of basmati rice and lemongrass. Riding the coattails of TikTok's viral edible butter candle trend, Papa Johns in the UK introduced limited-edition Garlic Butter Candles made with its signature Special Garlic Dip in honor of National Garlic Day. Hodges says, "Going forward, we expect to see boundless note combinations in gourmands, including Middle Eastern and bright candied notes, fiery spices, as well as the addition of bold fruits, florals, and whimsical notes that bring a new bright sweetness and a savory feel that differentiates these modern gourmands from the traditional."

[c]*https://perfumerflavorist.texterity.com/perfumerflavorist/september_2020/*

Courtesy of Joya Studio

Continuous Collabs

As discussed in Trendincite's *Perfumer & Flavorist*+[d] Forward Thinking September 2023 column, *Perfumer & Flavorist*+[e] Two Sense September 2022 podcast, and *Perfumer & Flavorist*+[f] Forward Thinking September 2021 column, Trendincite has been exploring candle and air care collaborations for several years. Collaborations are not waning.

According to Custom Essence, "The purpose of most brand collaborations is to engage and excite fans of the brands in question by bringing something of added value to them, and a powerful tool for brands to stay relevant is specific consumer segments. The idea of limited-edition collaborations creates a stir, especially in social media, that fuels consumer's interest and establishes brands as innovators and trendsetters." Media-inspired collaborations such as movies, TV shows, and podcasts are on trend. For example, Literie and Paramount partnered on a Mean Girls candle collection to celebrate the film's 20th anniversary. Designed with recognizable imagery from the movie, each candle has unique artwork and an individual scent. The Burn Book candle contains notes of smoke and clove bud and the On Wednesdays We Wear Pink candle scent is evocative of a toasted strawberry strudel. You're a Regulation Hottie candle has tulips and freesia accords. Bath & Body Works continues its year-long partnership with Netflix with a new Stranger Things collection. Dovetailing with the gourmand foodie trend, the Bath & Body Works x Stranger Things collection features Hopper's Coffee (roasted coffee grounds, tonka bean, and a splash of half & half), Eleven's Waffles (frozen waffles, maple syrup, and melted butter), Steve's Scoops (vanilla ice cream, golden waffle cone, and parlor sprinkles), and Argyle's Pineapple Pizza (baked pizza dough, juicy pineapple, and fresh basil). Host of the Ice Cold Case podcast, Madison McGhee, is the winner of Homesick's 2024 Candle Creation Contest. The limited-edition Homesick Cold Cases candle spotlights "a rich, deep, woodsy scent that evokes a mysterious and even slightly ominous atmosphere," with cardamom, dried rose petals, red wine, mahogany, patchouli, vanilla, black musk, and oud.

In addition to media collaborations, lifestyle and hospitality brands are partnering. In May, 1-800-Flowers.com partnered with Air Wick on a limited-time collection of exclusive bouquets inspired by Air Wick's signature home fragrances. The Air Wick x 1-800-Flowers.com Collection featured a floral bouquet paired with a complimentary Air Wick product. The Piece of Paradise Bouquet was paired with Air Wick Hibiscus & Blooming Orchids scented oil and advanced plug-in. The Lovely Lily and Lavender Bouquet came with Air Wick Vibrant Lavender & Waterlily scented oil and advanced plug-in. The Petal Perfection Bouquet featured Air Wick's Linen & Petals essential mist refill and diffuser. Luxury bamboo-based sustainable bedding and fashion brand Cariloha and Aera teamed up on Cariloha's signature home fragrance launch. The proprietary blend "captures the essence of the islands" with orange, mandarin zest, coconut water, tropical mango, white apricot, creamy vanilla, tonka bean, and sandalwood. California-based lifestyle company Flamingo Estate and JW Marriott collaborated on Expansion, a sensory collection inspired by Flamingo Estate's gardens. The exclusive line includes a signature scent, candle, reed diffuser, room spray, scent sticks, Holy Basil Leaf and Bergamot Wildflower honey, and four exclusive Harmonizing Wellness with Sound



Pura x Otherland features Matchpoint and Rattan scents "specially created to bring the energy of art, design, and luxury fragrance to life."

Courtesy of Pura

[d] *https://perfumerflavorist.texterity.com/perfumerflavorist/library/page/september_2023/22/*

[e] *https://www.perfumerflavorist.com/multimedia/audio/podcast/22236460/podcast-two-sense-candle-air-care-market-trends-with-amy-marksmcgee*

[f] *https://perfumerflavorist.texterity.com/perfumerflavorist/library/page/september_2021/24/*

playlists. The Expansion scent is crafted with scents from Flamingo Estate's gardens and is described as "a verdant aroma with notes of lush greenery, damp earth, rich white flowers, and warm, creamy woods." The fragrance highlights Holy Basil Leaf, white lotus flower, and rosemary. This collaboration is "aimed at personalizing guest experiences and deepening brand relationships through sensory engagement."

Pura is known for its collaborations with well-established brands such as NEST New York, Capri Blue, LAFCO, Anthropologie, Illume, and Disney. Pura's latest collaboration is with Otherland. Pura x Otherland "is a collection of two new fragrances specially created to bring the energy of art, design, and luxury fragrance to life." Inspired by a summertime tennis match, Matchpoint has notes of tennis ball, freshly cut grass, and cool cucumber. Rattan alludes to an escape to a beachside bungalow with notes of sandalwood, golden amber, and warm musk. "We wanted to build a marketplace of fragrances that people know and trust that are compatible with our technology instead of cannibalizing our fragrances. We embrace risks and failures as part of the creative process and modernize the way fragrance is created, welcoming the challenge to do things differently," states Mara Dumski, Pura's chief fragrance experience officer.

Interactive Scent Marketing Activations

Ambient scents and scent marketing are powerful tools to engage consumers. Retailers, hotels, and airlines are aware of the effectiveness and have been creating scented brand experiences for consumers. The newest interactive scent marketing initiatives include oversized 10-foot candles, scented streets, billboards, print ads, and a museum collaboration. Bath & Body Works debuted two 10-foot-tall candle activations in New York City. In honor of Annual Candle Day, on December 2 and 3, 2023, Bath & Body Works kicked off the "Come Back to Your Senses" campaign with a 10-foot-tall Tis the Season holiday candle in Herald Square. To celebrate the launch of season 3 of Bridgerton, Bath & Body Works and Netflix created a 10-foot 3-Wick Diamond of the Season candle displayed in NYC's Flatiron neighborhood on March 12 and 13, 2024. The scent features sparkling peach, spring daffodil, and radiant jasmine notes. For the 2023 holiday season, the Fifth Avenue Association, Nest New York, Bergdorf Goodman, and Scent Marketing Inc. partnered on scenting Fifth Avenue between 46th and 61st Streets. The Holiday Collective designed Christmas tree displays that emitted Nest's Holiday scent from November 20 to January 4, 2024. For an inaugural multisensory partnership, Brooklyn-based Joya Studio and the Brooklyn Museum joined forces "to evoke the seasons, settings, and spirit of Utagawa Hiroshige's 100 Famous Views of Edo in vivid, meticulous detail." This is one of several of Joya Studio's collaborations. Bouchardy says, "First and foremost, vision is the foundation for our collaborations. We look for genuine partnerships and methodical sharing of ideas, perspectives, skills, and styles. We want to learn to access new forms of connecting and communicating." Inspired by a special exhibition of Hiroshige's masterworks, the museum offered experiential scent tours with Jessica Murphy, Manager of Group Experiences and perfume historian, using scents specially created by Joya Studios with rare resins, essences of leaves, petals, and other



Joya x Brooklyn Museum's multisensory partnership is designed "to evoke the seasons, settings, and spirit of Utagawa Hiroshige's 100 Famous Views of Edo in vivid, meticulous detail." Candles shown: Cherry Blossom (Spring), Plum Rain (Summer), Vermilion Maple (Autumn), and Purple Wisteria (Winter).

Courtesy of Joya Studio



NATURE
BY CAMILLE
& CHARLOTTE
× MANE

Our company was established in the birthplace of perfumery, a land intricately entwined with nature, where the art of perfumery first blossomed. From the delicate essence of orange blossom to the sweet breath of May rose to sparkling Timur pepper from Nepal, we choose extraction methods that dovetail ancient craft and leading-edge innovation to bring forth nature's purest treasures and capture the exceptional ingredients that spread their roots across the world.

Camille & Charlotte are the winners of the Capture What Moves photo competition held by MANE.





Inspired by iconic women, Maison&Muse's car fresheners neutralize odors without overpowering or highly artificial scents.

raw materials. In the guided tour, selected prints were paired with scents "to reflect on the tension between natural and human-made elements in Hiroshige's vistas of a rapidly changing city." Designed "to conjure up the seasonal landscapes of Hiroshige's prints" the four scents include Cherry Blossom (Spring), Plum Rain (Summer), Purple Wisteria (Winter), and Vermilion Maple (Autumn). To accentuate the experience, the museum gift shop had an in-store atomizer emitting the Plum Rain scent using Joya's proprietary atomization technology. The scents were available as limited-edition candles. Adding to the multisensory experience, the museum's restaurant the Norm collaborated with Bar Goto Niban. The Bar Goto Niban x The Norm BkM limited-edition menu featured Japanese-inflected cocktails and snacks.

McDonald's in the Netherlands received a lot of press for its French Fry-scented billboards. The billboards were either blank red or yellow, with no print, image, or logo, and the smell of French fries was emitted. A hidden compartment stored French fries with an internal heat-and-ventilation system that spread the aromatic scent within approximately 16 feet of the display. Confused passersby were filmed for a YouTube film called "Smells Like McDonald's" and were interviewed afterward to see if they could identify the scent. Fortunately, McDonald's iconic aroma is recognizable. To promote India's peak mango season, on June 2, Indian grocery delivery platform Swiggy Instamart partnered with The Times of India daily newspaper on a full-page olfactory advertisement. The ad featured a visual of mangoes imbued with a mango fragrance and invited individuals "to read this ad with your nose for a complete sensory experience."

Odor-Neutralizing Air Care

In addition to creating an ambiance with pleasant scents, consumers use home fragrance and air care to combat unwanted malodors. "Traditionally, functional products required strong, overt scents to signal their purpose in neutralizing odors. We are seeing a growing demand for these functional products to be more elevated, creating ambient scent atmospheres working

Courtesy of Maison&Muse


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subtly in the background rather than merely masking unpleasant smells," notes Leka. The newest activity in odor-neutralizing formulas is for bathroom, pet, and car malodors. For example, Pourri has expanded its portfolio with Before-You-Go Potty Pods. The 2-in-1 plant-based odor freshener and toilet bowl cleaner dissolve in contact with water. It is available in Original Citrus scent with notes of bergamot, lemon, grapefruit, orange, eucalyptus, lemongrass, and leafy greens. ScentAir has been growing its line of Pet Calming scents using its proprietary Pet Calming Complex (PCC) formula "with engineered pheromone isolates and natural botanicals proven to promote a relaxing effect and reduce anxiety in dogs and cats." The products also contain the brand's Odor-neutralizing technology, which effectively combats unwanted pet odors at a molecular level. Aloe Oasis and Coastal Lavender are the newest fragrances to join the line. Aloe Oasis combines cucumber, lemongrass, bamboo, water lily, lavender, and musk, while Coastal Lavender blends chamomile, eucalyptus, and lavender. ScentAir introduced two odor-neutralizing scents to its auto fragrance product line, which comes with three pre-scented discs that last up to a month. The Emerald Meadows contains notes of green apple, lemongrass, lavender, solar amber, and sandalwood and is formulated with the PCC. The Cannabis Neutralizer "removes smoke odors and leaves behind a fresh scent of white tea blended with light fruits and subtle amber." Pet House by One for All showcased its Lemon Cupcake candle, Vanilla Sandalwood room freshening spray, and new Reed Diffusers at the Global Pet Expo 2024.

New Zealand-based Maison&Muse owned by MOXX Brands launched car fragrances and cleaning products in the U.S. "Our mission is to turn every product experience into a visceral and elevated sensory one to elevate everyday moments," states Renee Stuart, founder and COO at Maison&Muse. The Car Freshener Vent Clips range is inspired by iconic women from history and offered in four fragrances: Afterdark (Bergamot Citrus & Amberwood), Audrey (Blackberry & French Vanilla), Marilyn (Wild Vanilla & Caramel), and Whitney (Guava & Elderflower) and sold at Walmart. Target offers the Whitney Car Freshener Vent Clips and Hanging Car Air Fresheners in Marilyn and Brigitte (Coconut & Sea Salt) scents. Furthermore, "the sleek and stylish vent clips neutralize odors without overpowering or highly artificial scents, which has plagued the category until now," says Stuart.

Pura introduced three new car scents Black Frost, Car Wash, and New Car. Each scent is formulated with Pura's Open Air Tech™, "which actively neutralizes and removes bad odors at a molecular level, with patented odor control technology and replaces them with premium fragrance." Black Frost contains notes of saffron and coconut with a woody and floral blend of jasmine, sandalwood, and driftwood. New Car combines lavandin, geranium, leather, sandalwood, and musk while Car Wash is a "clean" scent with bergamot, cucumber, and apple blended with honeysuckle, fresh linens, and musk.



Voluspa offers 14 scents of the brand's Japonica Collection in the Refillable Program. Voluspa Goji Tarocco Orange refillable candle shown.

Courtesy of Voluspa

Sustainable Scents & Design

Trendincite's *Perfumer & Flavorist*+ "Forward Thinking: 6 Trends and Innovations in Ambient Scent," article, which appeared in the September 2023 edition, explored sustainable candles as one of the trends. Consumer interest in sustainable scents and design continues. "We've seen the rise of upcycled fragrances, ethically

sourced/fair trade ingredients, and claims of biodegradability taking center stage. These trends reflect a broader consumer's interest in conscientious products that connect with the brand's ethos," says Custom Essence. Healthy Candles is a fast-growing trend with 1.8K average monthly searches, which has grown 22.3% since last year with a 53.4% predicted YoY growth, per Spate. ScentAir is committed to sustainability and reducing its environmental impact. The brand redesigned its Whisper Home and Whisper Pro cartridge shells to be recyclable and introduced a Sustainable Fragrances line. ScentAir's Sustainable Fragrances line is available in two 100% sustainably produced scents, which use essential oils and sustainably sourced, naturally derived, and upcycled ingredients. The formulations have over 50% renewable carbon per ISO-16128. Eco Allure blends bergamot, cardamom, clove, pimento leaf, sandalwood, and oak. The fragrance features essential oils from Italy, Guatemala, and Indonesia, and upcycled ingredients from France, the Caribbean, and Indonesia. Eco Serenity combines bergamot, lavender, orange flower, cedarwood, and vanilla. Essential oils from Italy, France, China, Egypt, Indonesia, and Virginia are used in the formula.

Refillable candles continue to trend. "Refillable packaging offers win-win potential for brands, reducing environmental impact and costs while locking consumers in loyalty with refills," notes Custom Essence.

Voluspa introduced a Refillable Program with all 14 scents of the brand's Japonica Collection available. Individuals can purchase one of Voluspa's 9 oz Classic Candle vessels and Refill together, or separately. The biodegradable and home-compostable refill cup is made of starch, fibers, and water. The cup contains Voluspa's proprietary clean-burning, eco-friendly, and ethically sourced coconut wax blend and a 100% natural wick. Once used, customers can order a replacement of the wax refill.

Fashion brand Cult Gaia debuted a trio candle collection in refillable travertine stone vessels. Once the candle has reached the end of its lifespan, users can replace it with a new insert. The Cult Gaia Mast candle is inspired by the Farsi term for "intoxicating ecstasy" and highlights sun-ripened Italian bergamot, tropical coconut, Brazilian cumaru, orange blossom, Haitian vetiver, ambery forest notes, and musk. Cult Gaia Noor comes from the Farsi word for "light" and contains Madagascar's smoky black pepper, French rose, Haitian vetiver, lavender, and incense resin. Cult Gaia Zan pays homage to the Farsi word for "woman" and features white incense firabs, ambrox, captive musks, Guatemalan cardamom, cedarwood, ambrette firabs, and pink pepper. Italian luxury brand Bottega Veneta introduced a new collection of candles housed in hand-poured colored ceramic cups made with a multi-tonal volcanic glaze speckled with black and white bursts. The Lantern candle vessel is yellow and features an incense, suede, and rose scent while Raintree highlights fig leaves, thyme, and lavender absolute in a green container. Redstone has a red finish with a nectar, tobacco, and cedarwood blend. Once the candles are finished the ceramic cups can be reused. Diptyque released the Culbuto Oscillating Diffuser which is reminiscent of a metronome. The solid bulbous wooden base is designed with a refillable fragranced ceramic stick. The cold diffuser gently rocks back and forth emitting the Baies (Berries) scent with green notes of blackcurrant berries mingled with rose accents. "Sustainability remains key for consumers. Refillable candles and diffusers allow consumers to invest in one high-quality vessel and refill as needed," states Susan Youssef, Senior Marketing Executive at Quintessence Fragrances Ltd.

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Trending Fragrance Notes

Fortunately for perfumers, consumers cannot get enough gourmand home fragrance scents. From baked goods and coffee to classic and exotic fruits, creativity abounds. "We saw the popularity of vanilla earlier this year, we see a return to basic notes, like apple, even banana. Apple is the vanilla of fall, fresh, nostalgic, and comforting. Banana will move from sweet to woody while keeping those decadent gourmand undertones," says Youssef. Similarly, Custom Essence believes "fragrance trends are embracing a blend of nostalgia and innovation, drawing inspiration from diverse cultural influences and seasonal celebrations. Banana scents will evoke the comforting essence of freshly baked banana bread in the West and caramelized banana dishes from Latin America, the Caribbean, Africa, and Southeast Asia." Hodges adds, "Following the niche fragrance trend, home scents are becoming deeper, more nuanced and textured. We're seeing sophisticated and savory gourmands with notes such as tobacco, incense, and resinous frankincense, as well as deeply sensual vanillas in candles from the mass market to prestige."

In addition to gourmand directions, consumers enjoy a variety of scents and often use seasonal fragrances. For this fall, Bouchardy sees cozy firewood, spice, and the comforting ritual of burning palo santo as fragrance directions. In addition, he thinks "We are ready for the outdoors again, in a more direct way than a cloud of perfect perfume: vivid leaf-green, snappy stem, pulsating petrichor, geosmin, mineral, forest floor, asphalt, and dirt." Custom Essence expects more "Sacred scents" that honor traditional herbs and modern spirituality, paying tribute to holidays like Halloween and Día de Muertos. Likewise, Hodges sees spiritual scents with sophisticated marketing stories layered with specific olfactory stories adapted from fine fragrance trends trickling into candles and air care. Interest in spiritual scents is evidenced by Spate's research on Bakhoor, a Middle Eastern incense made from wood chips soaked in perfume oil and mixed with other natural ingredients. It is trending with 8.6K average monthly searches and a +100.0% growth in searches compared to last year.



Looking Ahead

Home fragrance trends and inspiration come from a variety of stimuli. Looking ahead, Bouchardy observes, "Home fragrance trends come in waves. They are just as likely to impact fine fragrance ones, paradoxically more so because people are likely to experiment with new home scents while staying loyal to their trusted perfumes." Hodges believes "Fine fragrance and personal care scents will continue to migrate to the home scent category blurring the line between the two, driven by consumer excitement around niche fragrances and high-end fragrance brands adding candles to their lines. We'll also see more well-being/mood enhancement scents that allow home fragrance consumers to experience more elevated sensory emotions."

Like other market categories, the younger demographic is influencing innovation. Leka expects "An even greater emphasis on personalization and interactivity in gourmand fragrances. Fragrances are likely multi-sensory, integrating visual and tactile elements to enhance the olfactory experience, making fragrance a more holistic and engaging part of their daily lives." As for odor-neutralizing scents, "There is a shift in consumer mindset towards functional products. It's a blend of functionality and sensory experience. Witnessing this change and adapting our creations to marry functionality with an elevated sensory atmosphere is both challenging and exciting," concludes Leka.

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Kalsec shares key market research driving consumer demand in the evolving snack market with a focus on LTO offerings.

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Crafting successful LTO snack flavors can benefit when finding a balance between the familiar and the unexpected. To attract consumers, brands could focus on flavor combinations that are both intriguing and relatable.

Let's talk limited-time offers (LTO) in the booming snack segment. How can brands prepare for these opportunities in this segment while incorporating pressing consumer demands?

Perfumer & Flavorist+ connected with Kalsec senior marketing manager Melissa Laupp to discuss the evolving snack segment, micro and macro trends informing product innovation and how Kalsec technologies can meet consumer demands for nutrition and ethics without compromising taste.

From Kalsec's perspective, how has the snack segment evolved over the last few years? What are consumers looking for in terms of flavor in 2024 and possibly 2025?

Melissa Laupp [ML]: The evolving preferences of consumers are significantly driving the snacks segment and we can see that the younger generations are beginning to make an impact in the purchasing of these foods. We've seen for many years that snacking continues to tick up in popularity with consumers as they are seeking convenience, but wanting to select options that align

Image by laplateresca at Adobe Stock

with their values and needs state. Consumers are more discerning than ever and they are pushing manufacturers to deliver products that not only taste great but meet their desired nutritional and ethical thresholds too. Higher protein, clean labels, free-from claims, plant-forward bases – these and so many more are seeing high growth and demand in the snack category.



Melissa Laupp

As far as flavors for this year and looking into 2025, the landscape in snacks still ranges widely catering to a variety of flavor preferences. There is still a nostalgic yearning for classic and comforting flavors that people know, recognize and love. The other part of that is though we are seeing the snacks category really push the bounds for bold and innovative flavors that push the borders of flavor exploration. Where I see manufacturers being able to cater to these two groups well is finding that balance of familiar yet fun.

Spicy foods and flavors continue to see growth year over year and I'd expect the snacks category to reflect this as well, but going beyond just spicy and getting specific with their heat sources.

What does Kalsec's research map show in terms of micro or macro trends in the snack segment? Are there any specific trends brands and developers should keep their eye on?

ML: We are seeing a consumer landscape where convenience is key, yet consumers are less willing to compromise on taste, nutrition, or ethics. They seek snacks that offer a high value, measured not solely by price, but by a combination of taste, quality, and alignment with personal values. Brands must deliver on flavor, nutrition, and transparency to capture this discerning market. By understanding the nuances of consumer desires, brands can develop products that resonate deeply and drive loyalty.

When it comes to LTO snack offerings, how can brands innovate with flavor combinations without missing the mark?

ML: Crafting successful LTO snack flavors can benefit when finding a balance between the familiar and the unexpected. To attract consumers, brands could focus on flavor combinations that are both intriguing and relatable. By selecting flavors with broad appeal and ensuring they complement each other, brands can create truly enjoyable snacking experiences.

For instance, the classic pairing of sweet and spicy has proven to be a winning formula, offering an intriguing contrast of flavors – hot honey, orange chipotle and chili lime. Exploring global cuisines can introduce consumers to exciting new flavor profiles while maintaining a familiar base as well. By carefully considering these factors, brands can develop LTO offerings that not only generate excitement but also deliver on taste.

What are some of the trending categories in the LTO snacking space? How can brands prepare for these opportunities in this segment?

ML: Strategic brand collaborations are shown to be a powerful tool for driving consumer interest and product innovation. By partnering with a complementary brand, you can expand your reach and introduce exciting new offerings to your consumer base. Leveraging the combined power of both brands and adding a strategic social media campaign, can lead LTO products into highly sought-after items.

Can you share some examples of how Kalsec's flavor technologies can address current and evolving consumer demands in the snack segment?

ML: Kalsec excels in crafting flavor profiles that precisely align with a snack manufacturer's product vision. Our expeller-pressed pepper line allows for explicit ingredient callouts on the packaging, a key consumer demand. We offer unparalleled customization of heat levels, ensuring products deliver the exact sensory experience desired. With a culinary-forward portfolio rigorously tested for consumer appeal, Kalsec is at the forefront of developing flavors that resonate. As consumers increasingly seek natural and minimally processed options, our portfolio of natural flavors provides a compelling solution.



The classic pairing of sweet and spicy has proven to be a winning formula, offering an intriguing contrast of flavors – hot honey, orange chipotle and chili lime.

Image by LimeSky at Adobe Stock

Everything You Need to Know to Prepare for *Flavorcon* 2024 in Atlantic City

Lower rates, higher value! Don't miss out on this year's *Flavorcon* event set for October 8-9.



Don't forget, BSF, SFC and WFFC members receive an additional discount! Reach out to your organization for the code for extra savings!

Photos by Peter Wynn Thompson

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We are just weeks away from the return of Flavorcon in Atlantic City, New Jersey! Scheduled for October 8-9, at Harrah's Resort & Casino, are you registered? Here's everything you need to know to prepare for the two-day event dedicated to the future of flavor and the tastemakers behind the scenes.

>>>Register now to set your flavor innovation agenda; 1-day passes are available, as are group rates.<<<

Breakfast, lunch and the Opening Cocktail Reception are included in your registration. To ensure this event is peak value for the flavor industry, we have lowered the registration rates for this year's *Flavorcon*! Be sure to visit *www.flavorcon.com* to see the updated rates for flavorists and suppliers.

Discounts for Flavorists

The event offers one-day expo hall passes if you're nearby and want to pop over and explore. Don't forget, BSF, SFC and WFFC members receive an additional discount! Reach out to your organization for the code for extra savings!

Our conference sessions will cover artificial intelligence's impact on the flavorist's day-to-day, the evolving citrus industry, how to track trending ingredients and flavors to map out market white space and more!

Come with business cards aplenty to network in between sessions, on the expo hall floor and poolside at our Opening Cocktail Reception. Really exciting things in store for *Flavorcon* 2024, don't miss your chance to be part of *the* flavor event of the fall!

Host Hotel

Flavorcon staff have negotiated a discounted room rate of $109 per night single/double occupancy, higher rates may apply for additional guests. Room rates are subject to state and local taxes, currently 13.625% plus a $7.00 per room per night lodging fee (subject to change without notice) and any applicable resort fees. Total charges presented on the website will include all room taxes, but not any applicable resort fees: $27.99 per night, per room, plus 13.625% tax. The Resort Fee includes unlimited local phone calls, a $5.00 voucher towards self-parking in the garage and complimentary in-room internet access (limited to 2 devices per room, per night) A credit card to guarantee the reservation is required. **Discount Deadline: Friday, September 6, 2024.**

Harrah's Resort Atlantic City

777 Harrah's Blvd., Atlantic City, New Jersey, 08401. Reservations: 888-516-2215 (8 a.m.-2 a.m. EST, 7 days



Flavorcon 2023 was home to Berje's Farmers Market, complete with a lemonade stand. You're in store for another creative booth this year!



Flavor legend John Wright returns to lead a live organoleptic panel on October 7. Seating is limited, grab your ticket today!

a week). When calling to make your reservation, please mention the group code **Flavorcon 2024**. All reservations can be canceled up to 72 hours before arrival.

Pre-Con

Flavorists, get your education started early with this first-come first-served pre-*Flavorcon* session on Monday, October 7! This session will take attendees on a guided tour through a lineup of organoleptic materials with the help of Bell Flavor & Fragrances principal flavorist, Cyndie Lipka, and junior flavorist Michael Morrison as well as a second session featuring independent flavorist and "Flavor Bites" columnist, John Wright and PepsiCo junior flavorist Giuseppe Bongiorno. This session has an additional fee and lunch is included!



Exhibitors are chomping at the bit to showcas the latest ingredients, technology and equipment to flavorists like YOU!

Expo Hall Preview

Flavorcon 2024 is on the horizon, and we thought we'd help you begin planning your trip to Atlantic City, New Jersey, for the October 8-9 show by sharing a sneak peek of the exhibitor list (as of Jul 29, 2024)!

Time to explore the latest flavor ingredients, technologies and services the industry has to offer with the help of:

- 3V Tech S.p.A.
- Almendra Americas
- American International Container
- Arora Aromatics
- Avant Organics
- Analytical Instruments
- Berjé Inc.
- Biospringer North America
- Capua 1880 USA Inc.
- Champion Container Corporation
- Cherry Marketing Institute
- Enterprise Food Products, LLC
- Farbest Brands
- Filter Process & Supply
- Grabner Instruments
- Gusmer Enterprises Inc.
- Hindustan Mint & Agro Products Pvt. Ltd.
- ICATS Education Ltd.
- IFEAT
- M&U International LLC
- Mafco Worldwide
- Natara
- Natural Advantage, LLC
- NEXIRA
- Prodalim
- Qaroma Flavors & Fragrances
- Rudolph Research Analytical
- SGS
- SiyoMicro Biotech
- Spero
- Syensqo
- Synerzine
- Tilley Distribution, Inc.
- TREATT
- Van Aroma
- VCF Online
- Women in Flavor and Fragrance Commerce (WFFC)

Begin plotting your expo hall experience by visiting *www.flavorcon.com*.

Important Notice: It has come to our attention that someone has been posing as an outside firm selling hotel rooms for the Flavorcon 2024 and contacting attendees/exhibitors to solicit credit card information. This may result in fraudulent credit card charges. Please be aware that neither Flavorcon nor Harrah's Resort Atlantic City will contact you with an offer to sell hotel rooms for the event or to ask for credit card information.

New to *Flavorcon*?

Flavorcon is designed to give flavorists and product developers the tools they need to succeed in an increasingly complex market, *Flavorcon* will connect the dots among emerging R&D advances, food and beverage market and flavor trends, and supply chain innovations. Attendees will come away inspired with new tools and connections to create flavorful wins and products consumers love.

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TikTok is Driving Gen Z Consumers to Become More Engaged in Fragrance

What makes Gen Z tick when it comes to fragrance preferences? Circana checks in to share market trend reports.

BY JACQUELYN MUELLER



Jacquelyn Wenskus, director, fragrance category analyst at Circana, said, "To capture this younger consumer, brands must fully encapsulate a mood, going beyond the scent itself and extending into how the brand is positioned, the imagery, the bottle or packaging, etc. All of these components must be very cohesive and strong to effectively evoke the desired feeling."

Image by Beyonder at Adobe Stock

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Gen Z consumers are becoming more engaged in fragrance, with TikTok driving 66% of their fragrance purchases, according to Circana.

There has reportedly been a spike in fragrance-related content on the social media platform, which has driven interest in the segment by Gen Z users.

Jacquelyn Wenskus, director, fragrance category analyst at Circana, said, "Gen Z is more inclined to try new scents and mix and match depending on their mood or vibe. To capture this younger consumer, brands must fully encapsulate a mood, going beyond the scent itself and extending into how the brand is positioned, the imagery, the bottle or packaging, etc. All of these components must be very cohesive and strong to effectively evoke the desired feeling."

According to Circana's 2023 Consumer Fragrance Study, 73% of Gen Z wear fragrance at least three times per week, which is up +5 percentage points compared to the prior year.



iRomaScents co-founders Erin Berry and Avner Gal, "As for the future of the industry, we believe that key consumers will likely continue to be characterized by sustainability, personalization, digital innovation, inclusivity, wellness and a preference for unique and authentic experiences."

Gen Z Fragrance Habits

- Gen Z is looking for variety when it comes to how they express themselves.
- Gen Z is significantly more likely to be influenced by social media, particularly TikTok.
- Gen Z leans increasingly more in favor of beauty specialty store experiences.
- Gen Z is more likely than other generations to see the value in purchasing five or more travel-size perfumes for the same price as one full-size bottle.

Wenskus adds that the variety Gen Z looks for has contributed to the double-digit growth of lower-priced fragrance alternatives such as mini or travel sizes and discovery sets, as well as the triple-digit growth of body sprays.

Gen Z Personalized Purchases

iRomaScents is a digital platform that privately asks shoppers questions, such as their favorite scents, how they want to feel when they wear a fragrance and desired price range, to find the best personalized option. The Wizard within the system guides the customer toward a curated collection based on their preferences.

Co-founders Erin Berry and Avner Gal say this process makes it easier for Gen Z shoppers to find the fragrance that matches their mood or reflects their individuality.

Berry and Gal said, "Overall, Gen Z thinks of fragrance as a key factor for shaping their daily identity presentation and general well-being. Unlike previous generations, who often purchased one fragrance and wore that signature scent consistently, Gen Z is more likely to choose fragrances based on how they feel on a particular day and are most likely to buy a scent for themselves several times a year, compared to other age groups. As for the future of the industry, we believe that key consumers will likely continue to be characterized by sustainability, personalization, digital innovation, inclusivity, wellness and a preference for unique and authentic experiences."

Berry and Gal continue, "Furthermore, younger generations don't want to spend hours trying different products to find what they like. They are impatient and expect everything to be fast. Therefore, they're going to be looking for a seamless process to get them in and out in a timely manner. With iRomaScents, shoppers can find their favorite fragrance in less than two minutes, without needing to scroll through all the options. The digital platform privately asks shoppers questions, such as their favorite scents, how they want to feel when they wear a fragrance, desired price range, etc., to find the perfect, personalized option with sample spritzes along the way."

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Image by Carlos David at Adobe Stock

Plant-based Company NotCo Sheds Light on How AI Innovates Flavor Formulation

NotCo's senior flavor scientist alongside machine learning team leader are set to take the *Flavorcon* stage to discuss the company's artificial intelligence platform and how it translates to plant-based formulations.



NotCo utilizes its proprietary AI "Giuseppe" to replicate animal products with plants.

Image by Iuliia Matkalova at Adobe Stock

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The global plant-based food market[a] is expected to reach $77.8 billion in 2025, according to Statista. The company's forecast projects that by 2030 the market will have more than doubled. What does that mean for flavor formulation in this segment projecting such explosive growth?

>>>Register now to set your flavor innovation agenda; 1-day passes are available, as are group rates.<<<

Flavorcon (*www.flavorcon.com*) tapped specialists at NotCo, a company known for its artificial intelligence (AI) platform "Giuseppe" that is said to discover unlikely pairings to mimic the tastes of animal-based foods using plant-based ingredients.

How NotCo Utilizes AI for Flavor Formulations

NotCo is described as a group of people with a common goal: to reinvent the food industry — one delicious mouthful at a time. NotCo utilizes its proprietary AI "Giuseppe" to replicate animal products with plants.

How it works according to NotCo:

"It all starts when we ask our algorithm, Giuseppe, to match the taste, texture, and smell of an animal-based product. It analyzes the structure at the molecular level and then replicates it using only plant-based goodness."

NotCo senior flavor scientist, Cindy Sigler, Ph.D., alongside machine learning team leader, Francisco Clavero, will introduce GAT (Generative Aroma Transformer), NotCo's cutting-edge Foundational Model for fragrance that can generate complete fragrance formulations from natural language descriptions. They will also discuss the impact of these technologies in the flavor and fragrance space.

Cindy Sigler, Ph.D., Senior Flavor Scientist, AI at NotCo USA

Cindy Sigler, Ph.D., is an emerging scientist in flavor and fragrance research with a strong foundation in analytical chemistry. Over the past four years, she has contributed to the industry through innovative research and product development. After focusing on analytical techniques for characterizing floral fragrance biochemical pathways, Sigler worked at Impossible Foods developing and implementing innovative flavor technologies for plant-based beef prototypes. She created specific flavor characteristics by reconstructing small molecules and volatiles and designed and executed sensory panels. Currently, at NotCo, Sigler develops flavor models to enhance the AI system, optimizing plant-based products to minimize the gap between them and their animal-based equivalents.



Cindy Sigler, Ph.D.

Courtesy of NotCo USA

[a]*https://www.statista.com/statistics/1280394/global-plant-based-food-market-value/*

Francisco Clavero, Machine Learning Team Leader at NotCo USA

Francisco Clavero is a Machine Learning and Full Stack Engineer with 6+ years of hands-on experience researching, developing, and deploying effective AI systems in varied industries, including Fintech, Telecom, and Biotechnology. More than four years of experience leading engineering teams to deliver performant and maintainable systems. Part of a global and multidisciplinary team of scientists and engineers across San Francisco and Santiago.



Francisco Clavero

How to Register for *Flavorcon* 2024

The NotCo team is set to take the stage on Tuesday, October 8, at 10 a.m. For more information on the two-day conference/expo geared for all things flavor, visit page 48.

We have lowered the rates for this year's *Flavorcon* set for Atlantic City, New Jersey, be sure to visit www.flavorcon.com to see the updated rates for flavorists and suppliers. We even have one-day expo hall passes if you're nearby and want to pop over and explore. Don't forget, BSF, SFC and WFFC members receive an additional discount! Reach out to your organization for the code for extra savings!

Don't miss your chance to network with colleagues from around the world and experience the latest innovations the flavor industry has to offer. p&f+

Want to know everything going on in flavor & fragrance? Sign up for *P&F+*'s newsletter. You can also follow along on Instagram and LinkedIn.

What's the Best Chocolate Pairing? The Worst? BSF Symposium Speakers Weigh In

BSF symposium speakers on chocolate pairings, their best memory of experiencing the ingredient, how chocolate has shaped their career and more.



Erica Liberto, professor of Food Chemistry, Univ. of Turin [All chocolate-related chemicals are my favorite because] the symphony of flavors for our senses is like the sound of the orchestra when you miss one instrument the sound changes."

Image by finwal89 at Adobe Stock

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Esarom senior flavorist Andrea Albertino shakes things up and is against the iconic chocolate and hazelnut pairing, "Fortunately, this is probably a very rare exception, otherwise, we would not be able to explain the massive success of all the products on the market where these two ingredients are combined."

The British Society of Flavourists (BSF) is set to host its second symposium on October 25 with all sessions dedicated to chocolate.

Honorary BSF president and esarom senior flavorist Andrea Albertino shares a discussion with symposium speakers on chocolate pairings, their best memory of experiencing the ingredient, how chocolate has shaped their career and more. Take a look below:

Andrea Albertino [AA]: What's your favorite chemical chocolate-related and why?

Erica Liberto, professor of Food Chemistry, Univ. of Turin: All of them! Because the symphony of flavors for our senses is like the sound of the orchestra when you miss one instrument the sound changes, with less theobromine you feel more astringency so a more strident sound as an out-of-tune violin, with less flavanol you fill a strong sound as a drum and with less esters a flat sound as a harpsichord.

AA: What does chocolate mean to you and how did it shape your professional career?

Michel Aubanel, VP R&DA Innovation, Kerry Taste and Nutrition: Chocolate/cocoa is linked to the chocolate eaten in the Alps after a long walk to collect raspberries. It is full of emotions and warm full feeling. It shapes my career because since 1989 I have been working to generate great-tasting cocoa extracts with variations of process and mass balance.

AA: What's the best chocolate pairing?

Clay Gordon, independent journalist, consultant, motivational speaker: The newest find. What makes it best is the excitement of discovery. I am also looking for unusual pairings, something that would not ordinarily occur to me. And it's usually a combination of flavor, texture, and situation: where and with whom is often as important as what. I do have a favorite pairing beer, a Belgian red ale, Rodenbach Grand Cru. I prefer Proseccos to Champagnes. My favorite paring wine is a Sauvignon Blanc a Côtes de Gascogne Grand Cuvée Montgravet.

Image by Irina Mikhalichenko at Adobe Stock

AA: Are you curious about tasting different products (flavored/different origins) or you are conservative in your choices?

David Nilsen, freelance journalist, speaker, podcast host & Advanced Cicerone: I'm very adventurous as a taster. I'm always looking to expand my descriptive vocabulary, often seeking out fruits and botanicals to smell and taste just for that purpose. While I have some favorites, I don't really divide chocolates and other indulgences into "good and bad" or "favorite and least favorite," choosing instead to seek out well-made examples across a variety of expressions. If given the choice between tasting something new and interesting or proven but familiar, I will almost always choose the former.

AA: What is the best memory you have about chocolate?

Jimena Gomez de la Flor, communications director at EFFA: I spent my first salary on a chocolate feast with my sister. The big chocolate fondue from Häagen-Dazs—lots of fruits, and ice cream covered in chocolate. It became a tradition, and that's how we would spend our first check at any new job. Chocolate brings people together.



Jimena Gomez de la Flor, communications director at EFFA shares her best chocolate memory, "I spent my first salary on a chocolate feast with my sister. The big chocolate fondue from Häagen-Daz—lots of fruits, and ice cream covered in chocolate."

BSF: What is the worst chocolate pairing?

AA: I want to be disruptive here, I just don´t get it when chocolate is paired with hazelnut! Fortunately, this is probably a very rare exception, otherwise, we would not be able to explain the massive success of all the products on the market where these two ingredients are combined. I simply find that the specific creaminess of hazelnut (flavors) sticks out when combined with chocolate, milk or dark. Instead, I simply love a touch of salt in it!

BSF Chocolate Symposium Sessions

The BSF Symposium on Chocolate will host the following sessions:

1. University professor Peter Schieberle, Ph.D., will be presenting "Understanding Chocolate Aroma: On the Way from Cocoa Seeds to Chocolate Consumption."

2. Communications director for the European Flavour Association (EFFA) Jimena Gomez de la Flor will present "The European Flavour Association distilled: Anticipation through regulation, influence via advocacy, and amplification through communication." This session is designed to provide a brief exploration of how EFFA's initiatives can empower the craft of flavorists.

3. Kerry Global Flavor Ingredients director Michel Aubanel will present "The Technology Behind Cocoa Flavor."

4. Associate professor of Food Chemistry Erica Liberto will present a hybrid presentation titled "Cocoa Flavor Quality and Artificial Intelligence in the Industry 4.0."

5. esarom senior flavorist and honorary president of BSF Andrea Albertino will present "Have you ever thought about using these chemicals in a chocolate flavor?" (after first presenting at Flavorcon 2024 in Atlantic City, New Jersey.)

6. ZOTO lead cocoa advisor Zoi Papalexandratou and *The Chocolate Life*'s Clay Gordon will present "Quantifying the Flavours of Cocoa and Chocolate."

7. Freelance beer journalist David Nilsen will present "From Pod to Pint: Unlocking Surprising Flavors & Harmonies Between Craft Beer & Craft Chocolate."

For more information on the BSF Symposium on Chocolate, visit *www.bsf.org.uk*.

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World Perfumery Congress **2024** Hosts 1,600+ Attendees in Geneva

Don't miss event highlights from *WPC*'s return to Europe!



The expo hall was decorated with some of the most elaborative and imaginative booths, inviting attendees to dive in nose first.

Photos by Peter Wynn Thompson

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ASP president James Krivda (L) moderating "The Perfumer's Take on Artificial Intelligence" panel featuring Givaudan senior perfumer Linda Song, Symrise senior perfumer Pierre Gueros and FoodPairing AI project manager Simon Van Cauwenberge.

BY JENNA TROYLI, Managing Editor, *Perfumer & Flavorist+*.



Jenna Troyli

The 2024 *World Perfumery Congress* (*WPC*) hosted 1,600+ attendees from around the world at the Palexpo in Geneva, Switzerland from June 24-27.

Presented by the American Society of Perfumers (ASP) and produced by Allured Business Media, this year's theme was **Fragrance Forward: Where Global Innovation & Creativity Meets**. The three-day conference tasked speakers to discuss key factors driving innovation in fragrance—including global trends across segments, regulatory updates and how the latest strides in technology, with an emphasis on artificial intelligence, are influencing the industry and perfumers' creativity.

At the year's event, the ASP honored master perfumer John V. Pascale with the Lifetime Achievement Award.

During his acceptance speech, Pascale said, "Perfumers never die, they just evaporate."

Pascale was surrounded by industry colleagues to celebrate his achievement and closed the night with champagne and cheers.



John V. Pascale awarded the American Society of Perfumers' Lifetime Achievement Award.



IFF's LMR Naturals (LMR) unveiled three new fragrance ingredients: Ylanganate, a new fragrance molecule; and Grapefruit and Persian Lime Oils from LMR.

Major names took the WPC stage including Inter Parfums Inc. chairman and CEO Jean Madar, Pura chief fragrance experience officer Mara Dumski, fragrance expert, taxonomist and author Michael Edwards, Dominique Roques, Mark Knitowski, Christophe Laudamiel as well as representatives from Procter & Gamble, Grupo Boticario, Givaudan, dsm-firmenich, IFF, Symrise, Mane, BASF and alongside many others.

The event featured a bustling expo hall with nearly 120 exhibitors, the largest assembly of exhibitors the event has ever had the pleasure of hosting. The expo floor was decorated with some of the most elaborative and imaginative booths, inviting attendees to dive in nose first to the latest ingredients, technologies and services the industry has to offer. We hope that our attendees, exhibitors and speakers left the Congress invigorated and inspired to create the next big trend in fragrance.

We are so thrilled for the overwhelming support from the fragrance sector as the *WPC* returned to Europe after six long years. It was such an honor to share the stage with key industry leaders to discuss what is new, now and next in scent. Be sure to follow Perfumer & Flavorist+ on LinkedIn and Instagram (@perfumer_flavorist) for behind-the-scenes footage and coverage from the three-day event in Geneva.

The location and dates for *WPC* 2026 will be announced soon–stay tuned!

perfumer & flavorist

flavorcon®

The Sensory Event for Flavor Leaders

October 8-9, 2024

Join **John Wright, Cyndie Lipka, Giuseppe Bongiorno** and **Michael Morrison** for the **Pre-Flavorcon Interactive Organoleptic Panel!**











Harrah's Resort & Casino
Atlantic City, NJ

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Developing Better Products through Natural Chemistry

Penta Manufacturing Company is Family Owned and Operated for Over 45 Years.

Here is a partial listing of our Family of Custom ingredients utilized in flavor & fragrance formulations.

For detailed paperwork on all of our items consult our web site at www.pentamfg.com

- FLAVIS 2.163 2-HEXANOL
- FLAVIS 9.643 METHYL GERANATE
- FLAVIS 13.132 FURFURYL HEXANOATE
- FLAVIS 13.17 L-ROSE OXIDE
- FEMA 2144 BENZYL ETHYL ETHER
- FEMA 2251 CARVEOL PROPIONATE
- FEMA 2298 CINNAMYL CINNAMATE
- FEMA 2366 TRANS-2-DECENAL
- FEMA 2374 DIETHYL MALATE
- FEMA 2431 ETHYL CYCLOHEXANE PROPIONATE
- FEMA 2495 FURFURYLIDENE ACETONE
- FEMA 2535 GUAIACOL PHENYL ACETATE
- FEMA 2706 2-METHYL HEPTANOIC ACID
- FEMA 2865 PHENYLET HYL FUROATE
- FEMA 2888 HYDRATROPIC ALDEHYDE DMA
- FEMA 2952 PROPYLIDENE PHTHALIDE
- FEMA 3006 SANTALOL
- FEMA 3007 SANTALYL ACETATE
- FEMA 3137 2,6-DIMETHOXYPHENOL
- FEMA 3142 CITRONELLIC ACID
- FEMA 3333 3-BUTYLIDENE PHTHALIDE
- FEMA 3426 ACETALDEHYDE DMA
- FEMA 3492 ETHYL UNDECANOATE
- FEMA 3539 OCIMENE NATURAL
- FEMA 3599 TIGLIC ACID
- FEMA 3690 CIS-3-HEXENYL LACTATE NATURAL
- FEMA 3697 2-HYDROXY-4-METHYLBENZALDEHYDE
- FEMA 3723 2-OXOBUTYRIC ACID
- FEMA 3733 P-CRESYL CAPRYLATE
- FEMA 3896 PRENYL MERCAPTAN
- FEMA 3912 9-DECENAL
- FEMA 3983 TRANS-2-HEXENYL CAPROATE
- FEMA 4008 TRANS,TRANS-3,5-OCTADIEN-2-ONE
- FEMA 4100 3,5,6-DIMETHYL-2-ISOBUTYLPYRAZINE
- FEMA 4121 GERANIC ACID

For a complete list of all our natural, natural identical and synthetic ingredients visit us at www.pentamfg.com

Penta®

Penta Manufacturing Company

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