

The impact of UPFs on food colors

Insights partner for innovation

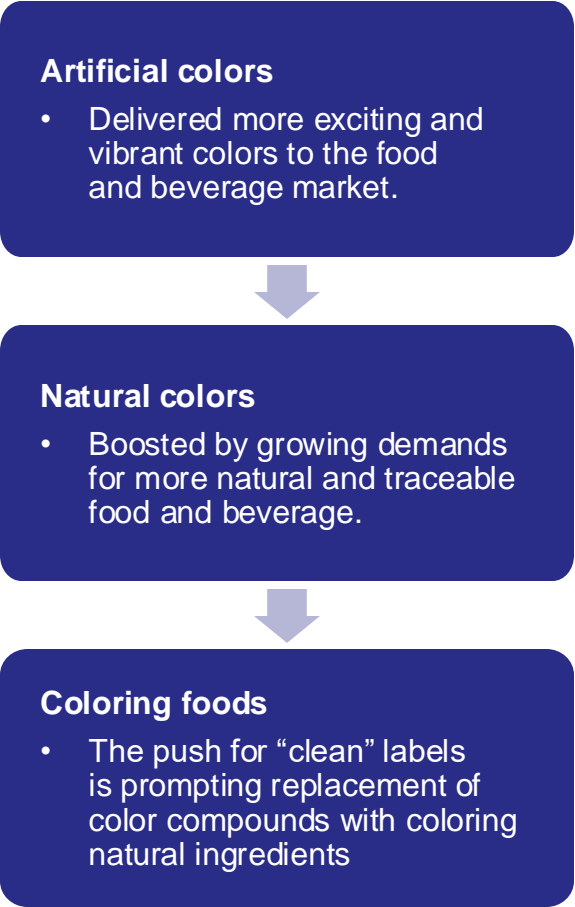


[Talk to Innova](#)

Color ingredients by definition

Artificial colors	Colors that are chemically derived, artificial, or synthetic. Typically made up of complex hydrocarbons, nitrogen and sulfur ions. They are generally more stable and economical than natural varieties and come in various forms, e.g., liquids, gels, powders and pastes.
Natural colors	Coloring agents derived from natural sources such as vegetables, fruits, plants and minerals. They are obtained by physical and/or chemical extraction, which separates the pigments from nutritive and aromatic constituents, and also come in various forms.
Coloring foods	Natural extracts or concentrates from plants, fruits or vegetables that can deliver color. To be called a coloring food, the pigments must not undergo selective physical and/or chemical extraction relative to the nutritive or aromatic constituents.

The progression of color use



Source: Innova Market Insights

Ultra-processed foods are the new smoking...

The New York Times

How Bad Are Ultraprocessed Foods, Really?

They're clearly linked to poor health. But scientists are only beginning to understand why.



life but better
Food

Adding just a few ultraprocessed foods to a healthy diet raised risk of cognitive decline and stroke, study says

By Sandee LaMotte, CNN

🕒 4 minute read · Updated 4:32 PM EDT, Wed May 22, 2024

food
ingredients 1st

Ultra-processed food update: New research suggests diet quality mitigates higher mortality risk

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13 May 2024 --- Higher consumption of most ultra-processed foods (UPFs) is linked to a "slightly higher" risk of death, according to a 30+-year US study. The researchers found the strongest association for ready-to-eat meat, poultry and seafood-based products, sugary drinks, dairy-based desserts and highly processed breakfast foods. Moreover, a higher diet quality seems to mitigate these associated risks.

The team cautions not to restrict all UPFs equally, noting that their findings "provide support for limiting consumption of certain types of UPFs for long-term health."



Ultra-processed foods harm multiple body systems, new research review finds

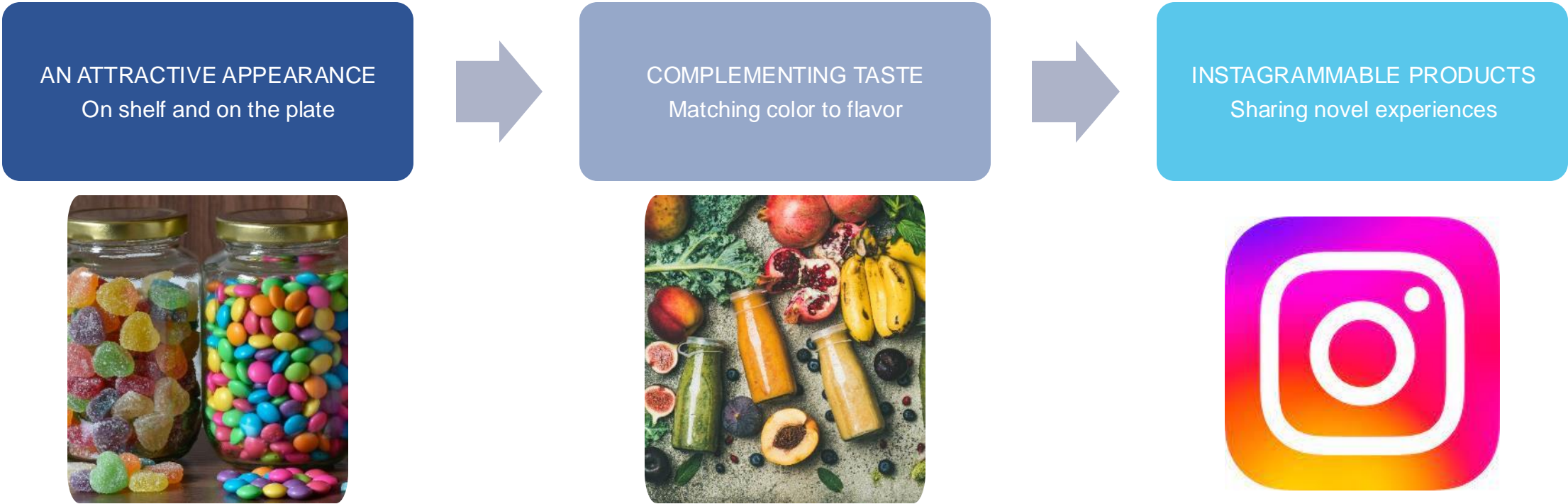
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nutrition
insight

Sources: [The New York Times](#), [CNN](#), [Food Ingredients First](#), [Nutrition Insight](#)

...yet, color continues to play a bigger role

- Color is important in the perception of flavor, i.e., if a color and flavor are not correctly aligned, consumers may actually identify the flavor by the color and not the taste. Color can also contribute to a product's image, e.g., caramel colors can give an indulgent feel and bright colors can instill a sense of fun. This last aspect has become particularly important in the modern social media age, with younger customers often assessing their food choices on the basis of their Instagrammability.



Source: Innova Market Insights

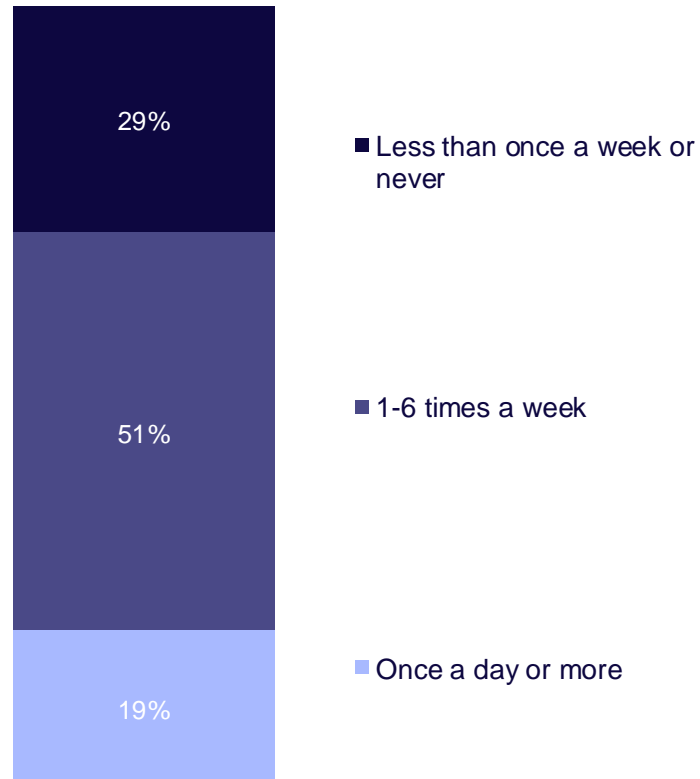


Navigating the contrasts: UPF stigmas and contemporary color

Consumers' Perspective

Consumers may not realize the amount of ultra-processed foods they consume

Self-reported consumption frequency of “ultra-processed” foods



VS.



Ultra-processed foods harm multiple body systems, new research review finds

February 29, 2024

“The share of UPFs in the diets of high-income nations is growing increasingly large, with **58%** of dietary energy in the **US** being derived from such food products.”

Sources: Innova Ozempic & UPF 2024 Survey (Average US), [Nutrition Insight](#)

Consumers have a limited perspective on what “ultra-processed” foods are

Descriptions consumers associate most with “ultra-processed” foods
(US, 2024)

Top 5	Description
#1	Fast food/junk food
#2	Foods that contain lots of additives
#3	Foods using synthetic/artificial (unnatural) ingredients
#4	Foods with many processes performed by the food industry
#5	Foods high in sugar, fat, salt and/or calories

Sources: Innova Ozempic & UPF Survey 2024 (Average US), [Center for Epidemiological Studies in Health and Nutrition](#)



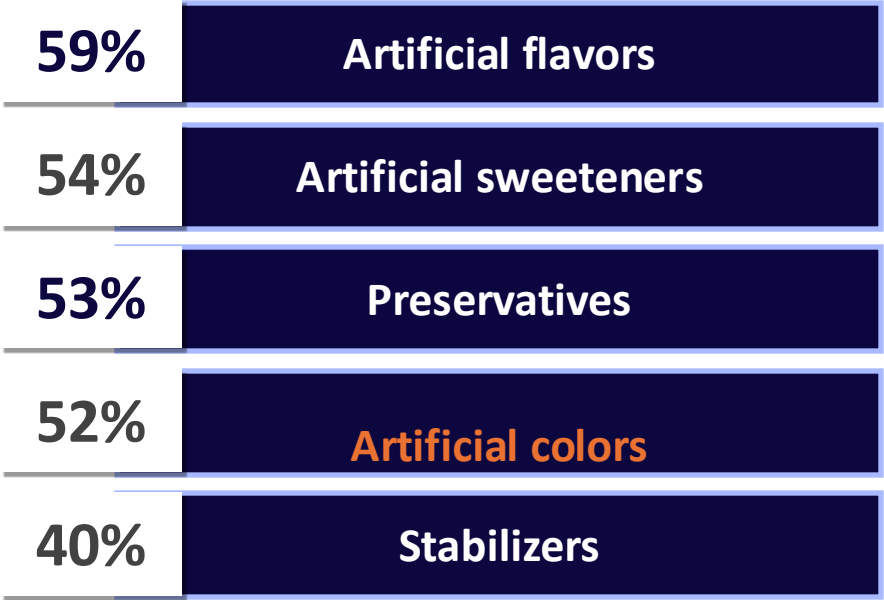
Consumers are also ingredient-focused when identifying UPF

“How would you assess whether a food product is ‘ultra-processed’?” (Select up to 3)
(Average: US, 2024)

- 1 I look at the ingredient list.
- 2 I look at the nutrition information.
- 3 I look at the product itself.

1 in 5 US consumers are **actively trying** to **limit artificial ingredients** in their diet.

Ingredients associated most with ultra-processed foods (Top 5 of 11)



Source: Innova Ozempic & UPF Survey 2024 (Average US)

Understanding, or lack thereof, is “50/50”

“Ultra-processed foods are unsafe to consume.”



Generation Z 36%



Millennials 45%



Generation X 43%



Boomers 43%



Millennials are most concerned about the **safety** of UPF, while **Boomers** are **over-indexing on lack of trust** of UPF.

“I don’t trust ultra-processed foods.”



Generation Z 42%



Millennials 44%



Generation X 46%



Boomers 54%

Source: Innova Ozempic & UPF Survey 2024 (Average US)

Indulgent categories bear the brunt of blame

“Which categories do you associate most/least with ‘ultra-processed’ foods?” (Average: US, 2024)

MOST

- Ready meals
- Cakes, pastries & sweet goods
- Sugar confectionery

LEAST

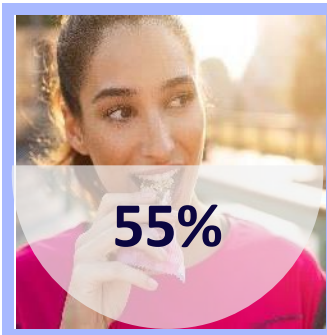
- Fish & seafood
- Bottled water
- Meat & poultry

Sources: Innova Ozempic & UPF 2024 Survey (Average US), [Scout](#)
Notes: Q: “Which categories do you associate the most with ‘ultra-processed’ foods?”
Q: “Which categories do you associate the least with ‘ultra-processed’ foods?”

Still, ingredients, including color, can lend value



consumers globally say that they **always look at ingredients** of interest on the product pack.



of US consumers say they **only** want to consume products of which they **understand the ingredient list**.



Poppi
Lemon Lime Prebiotic Soda

“Prebiotic soda. No fake stuff. With 4g sugar, totally clean ingredients.”

United States, May 2024

Sources: Innova Trends Survey 2024 (Average of Brazil, Canada, China, France, Germany, India, Indonesia, Mexico, Spain, UK, US), Innova Ozempic & UPF Survey 2024 (Average US)

Artificial is not entirely a done deal

Figure 22 | Do you agree with the following statement about naturalness? (Average: 11 countries) (2022)



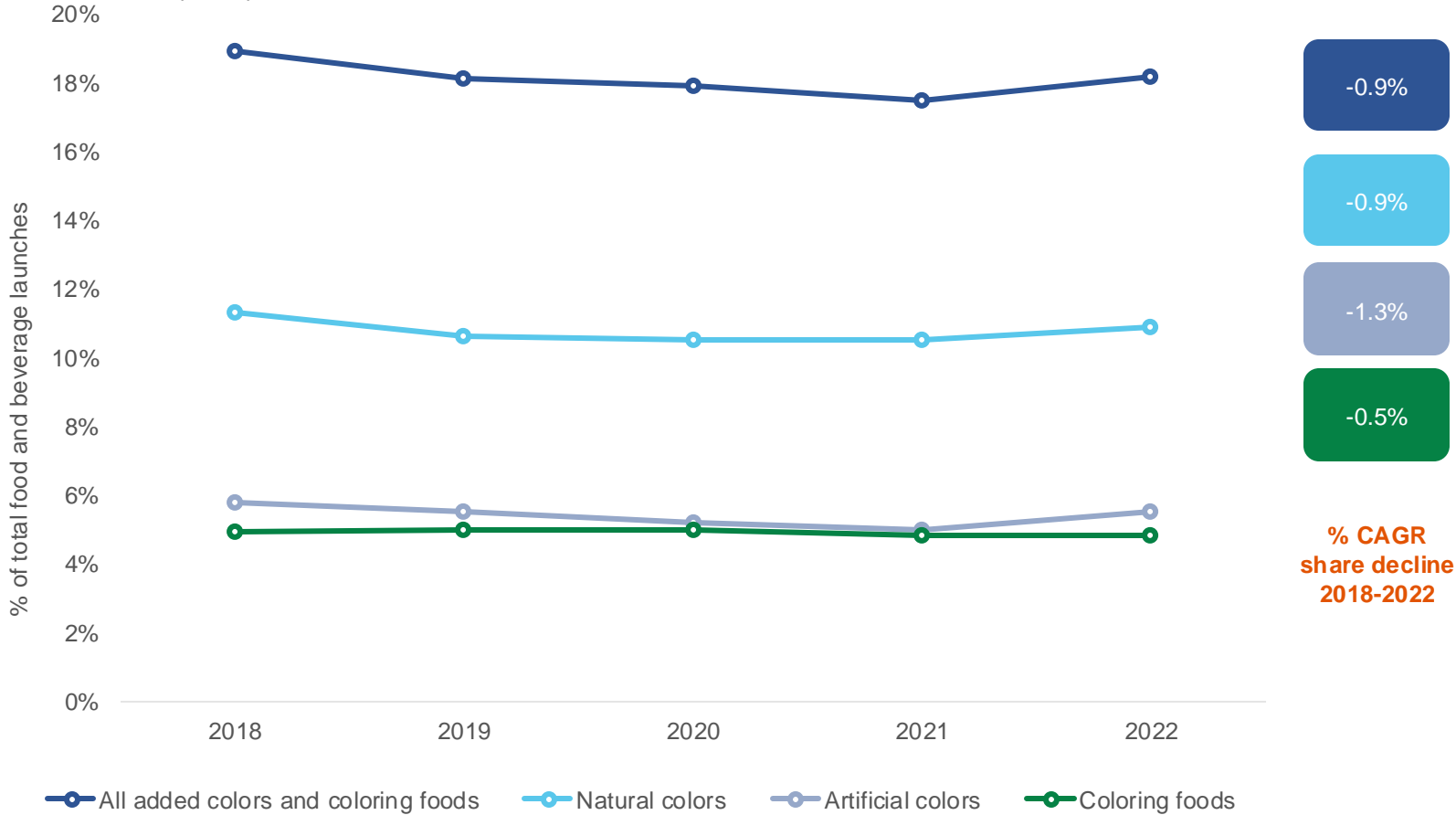
Sources: Innova Database, Innova Health & Nutrition Survey 2022



Brand activities

Sign of the inflated prices

Figure 3 | Global use of added color ingredients as a % of new food and beverage launches tracked (2022)

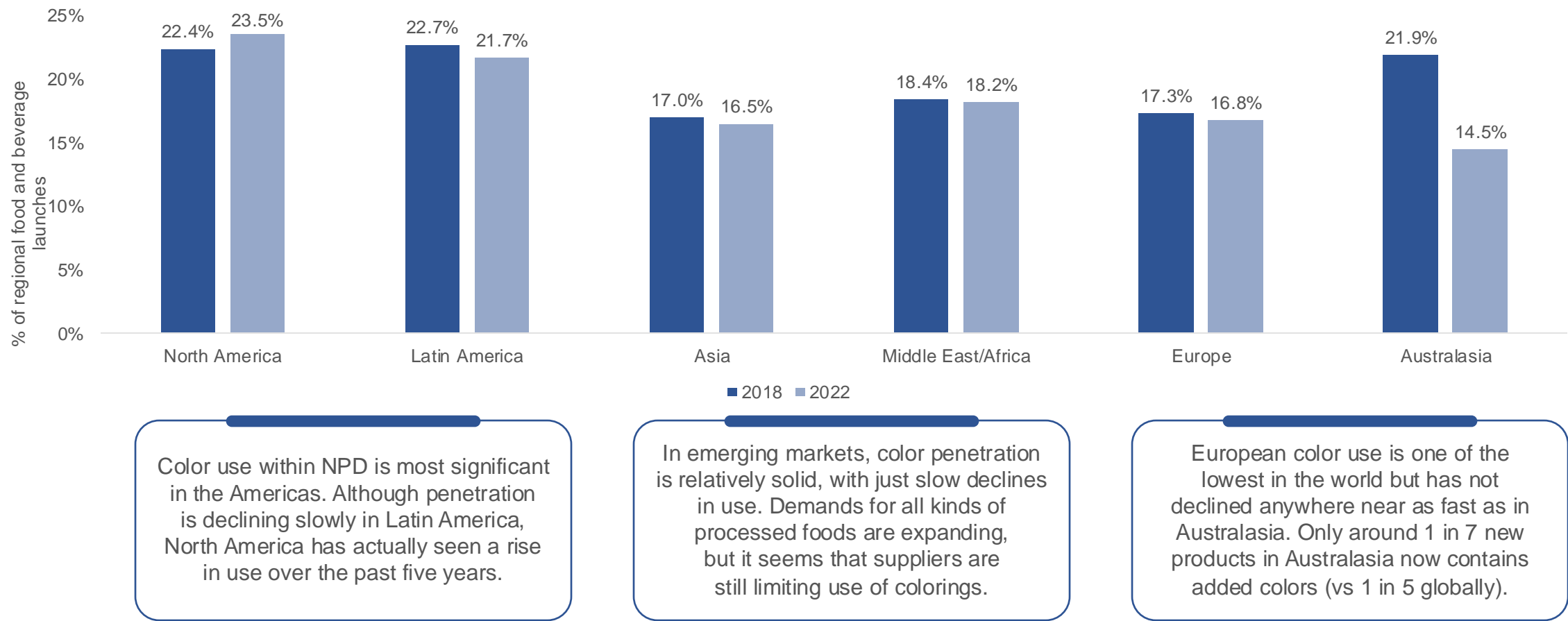


- An uptick in overall color use in 2022 suggests a COVID hangover and rising interest in delivering exciting, colorful foods to provide cheer to customers.
- Cost-of-living pressures, with suppliers turning to known economical ingredients in order to economize yet still indulge

Source: Innova Database
Note: Categories are not mutually exclusive; products may contain more than one type of coloring agent

Global shifts demonstrate North America turns to color

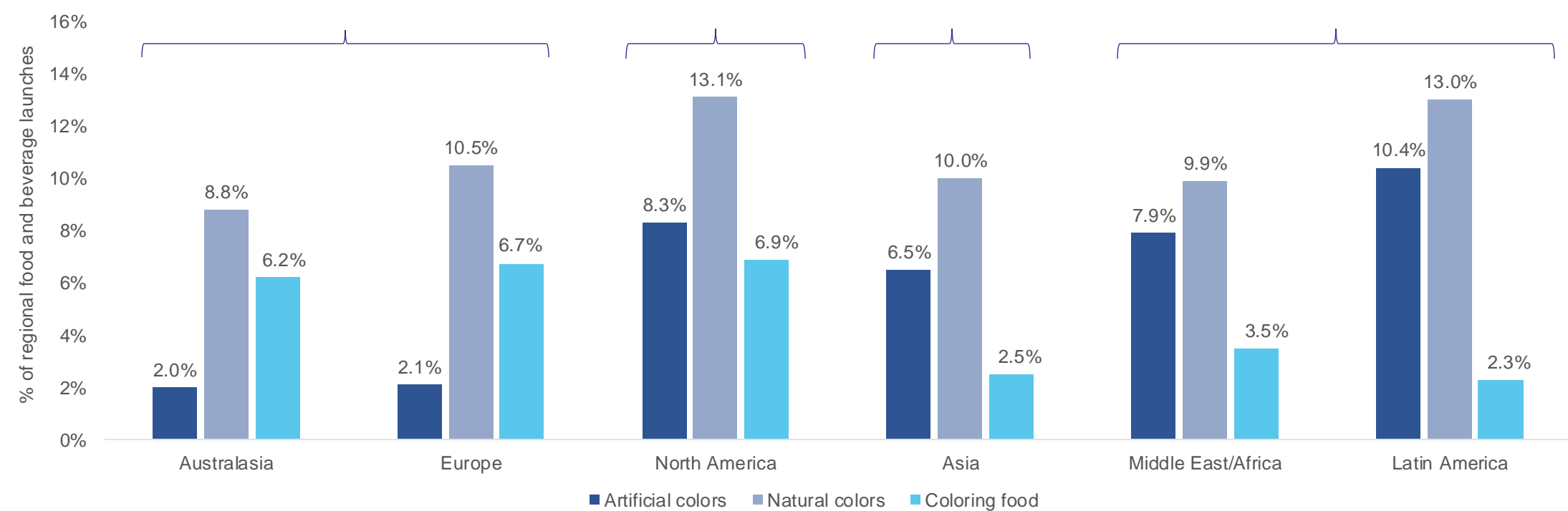
Figure 4 | Use of all added color ingredients as a % of new food and beverage launches tracked by region (2018-2022)



Source: Innova Database

Americas regions lead for both colors in all forms

Figure 5 | Use of artificial colors vs natural colors vs coloring foods as a % of new food and beverage launches tracked by region (2022)

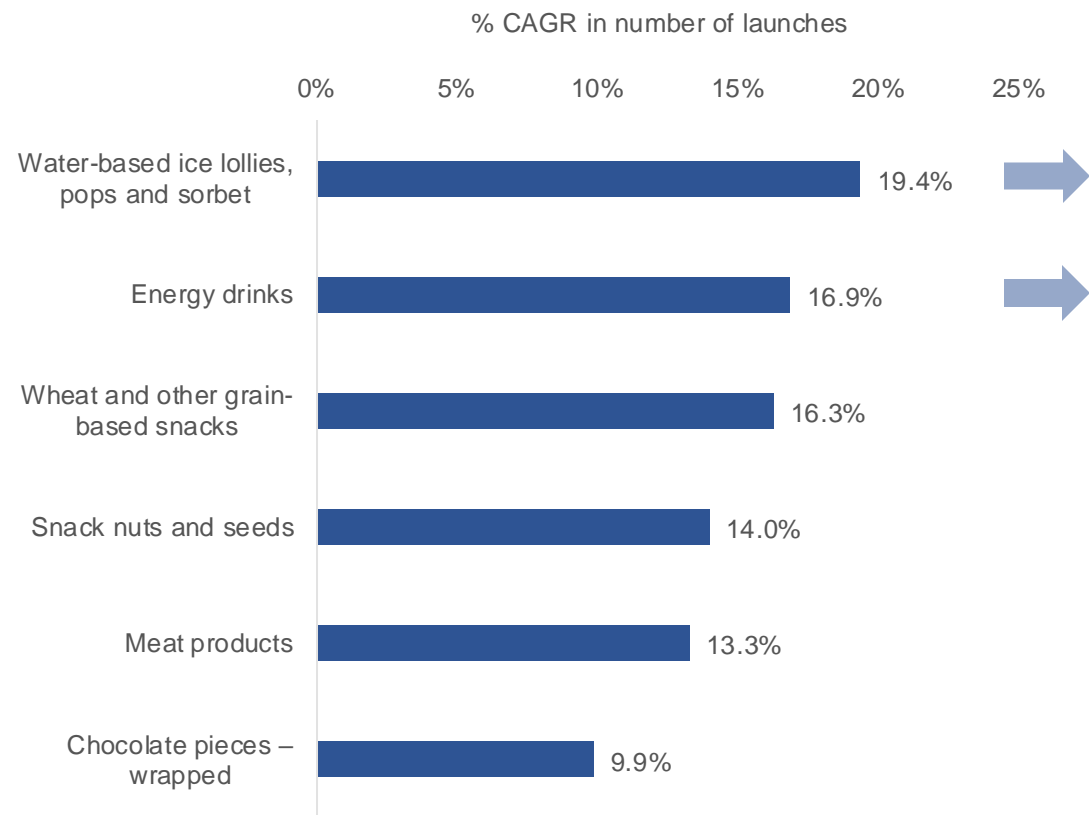


Source: Innova Database

Note: Categories are not mutually exclusive; products may contain more than one type of coloring agent

Fast-growing categories for artificial colors

Figure 7 | Selected fast-growing categories in average annual growth of new food and beverage products tracked with artificial colors (% CAGR 2018-2022)



Note: Minimum threshold 100 launches

Artificial colors still popular in image-led drinks and snacks

Where image outweighs ingredients



Go Energy Berry Cotton Candy Flavored Energy Drink

South Africa, Feb 2023

An energy drink with caffeine and taurine. With E122 azorubine (or carmoisine) color.



F And N Magnolia Justice League The Flash Lemon Soda Ices

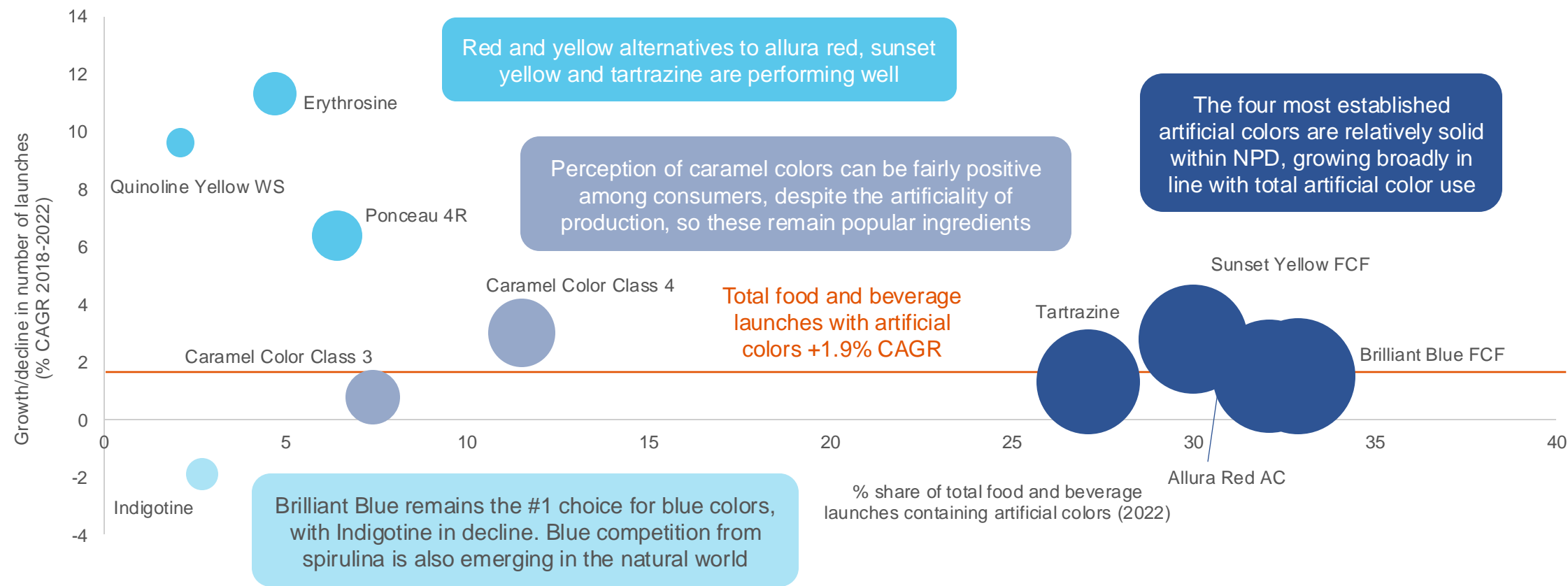
Malaysia, Mar 2023

Lemon soda flavored ices. With caramel, allura red and tartrazine colors.

Source: Innova Database

Artificial colors: Niche reds and yellows outshine the old favorites

Figure 24 | Global launch trends in key types of artificial colors (% CAGR 2018-2022)



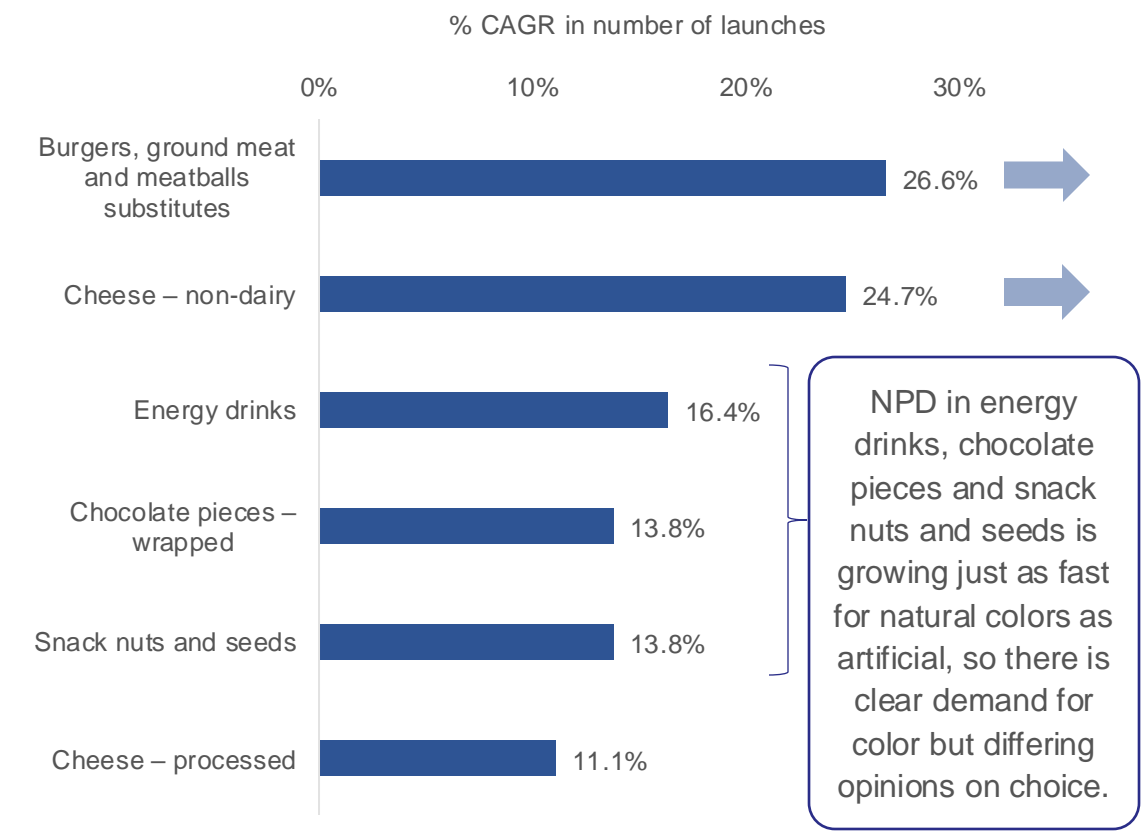
Bubble size reflects share of total food and beverage launches containing artificial colors

Source: Innova Database

Note: Top 11 artificial colors; minimum threshold 300 launches in 2022

Fast-growing categories for natural colors

Figure 8 | Selected fast-growing categories in average annual growth of new food and beverage products tracked with natural colors (% CAGR 2018-2022)



Note: Minimum threshold 100 launches

The plant-based movement continues to boost natural colors

Demand from both meat and dairy alternatives



Impossible Chicken Patties Made From Plants

United States, Feb 2023
Alternative to spicy chicken patties. With paprika and annatto extracts (plus beet powder).



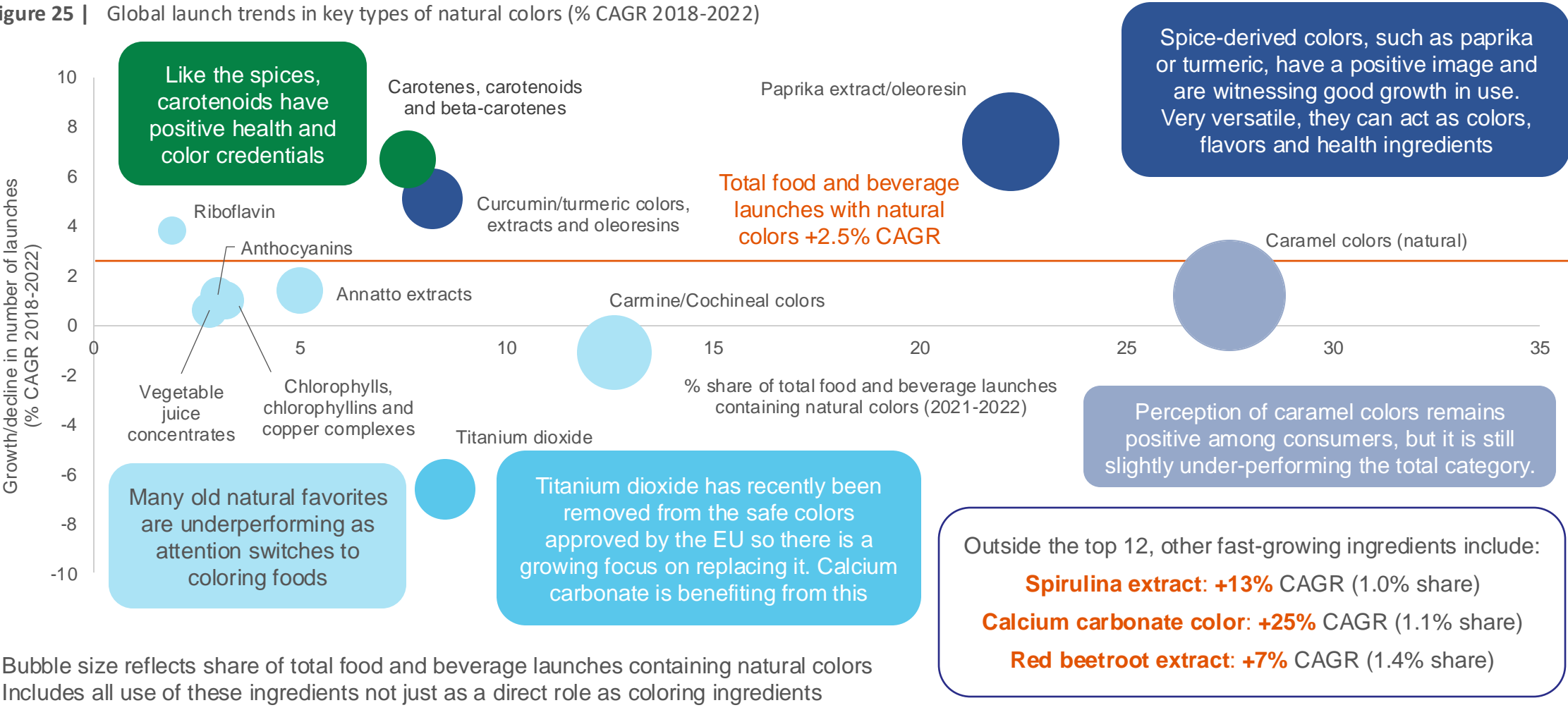
Bedda Hearty And Spicy Slices Of Chili Cheese Alternative

Germany, Mar 2023
Vegan cheese alternative made with coconut oil and chili. With beta carotene for color.

Source: Innova Database

Natural colors: Spice-based colorings and carotenoids are the star performers

Figure 25 | Global launch trends in key types of natural colors (% CAGR 2018-2022)

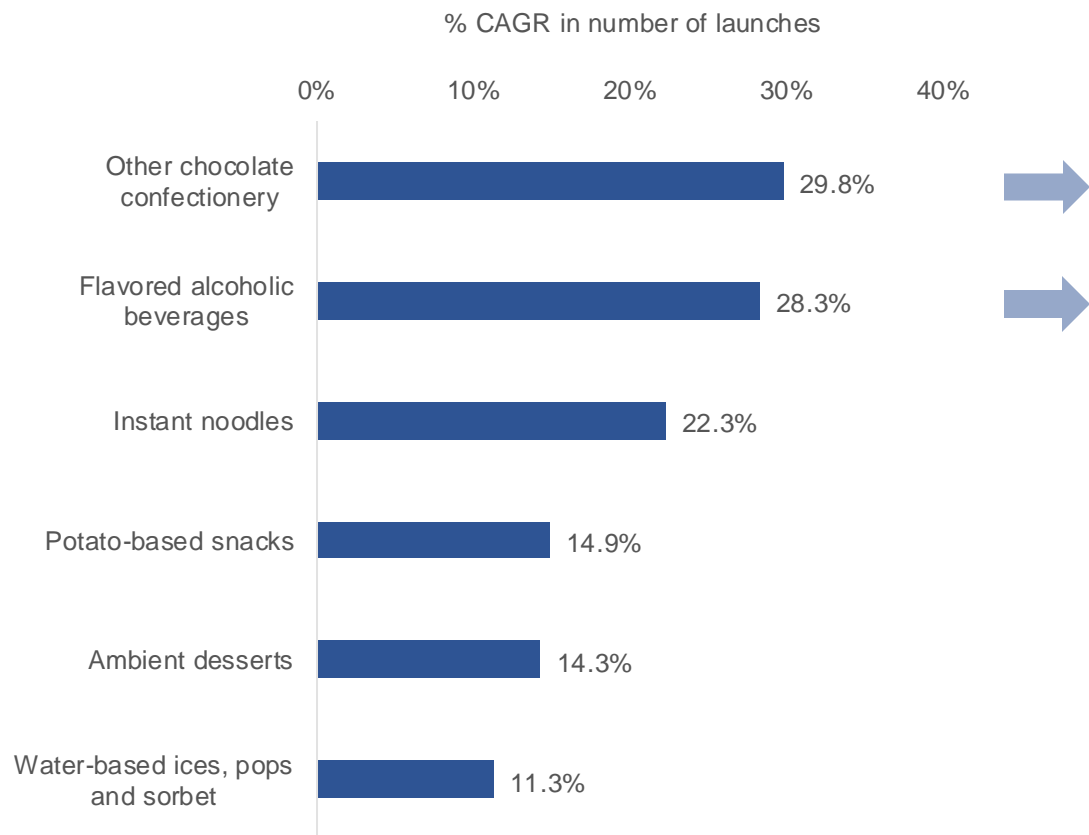


Source: Innova Database

Note: Top 12 natural color categories; minimum threshold 600 launches in 2022

Fast-growing categories for coloring foods

Figure 9 | Selected fast-growing categories in average annual growth of new food and beverage products tracked with coloring foods (% CAGR 2018-2022)



Note: Minimum threshold 100 launches

Coloring foods can add value to seasonal/indulgent products



Lidl Favorina Crispy White Chocolate Egg

Estonia, Mar 2023

A hollow white chocolate egg with sugar pearls and chocolate candies. With concentrates of spirulina, apple, beetroot, sweet potatoes and radishes.



Garage Raspberry Vodka Lemonade

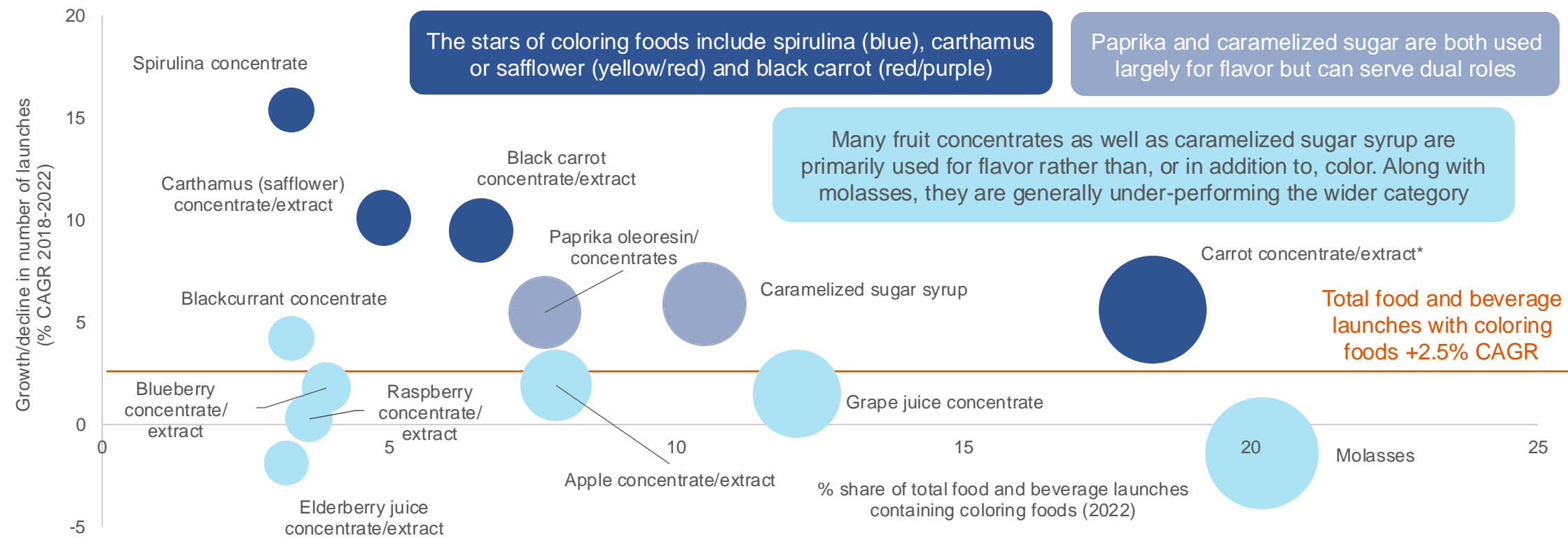
Finland, Mar 2023

A vodka-based drink (4.1% ABV) flavored with raspberry lemonade. With carrot extract to adjust color.

Source: Innova Database

Coloring foods: Spirulina and safflower are in double-digit growth within NPD

Figure 26 | Global launch trends in key types of coloring foods (% CAGR 2018-2022)



Bubble size reflects share of total food and beverage launches containing natural colors
Includes all use of these ingredients not just as a direct role as coloring ingredients

Source: Innova Database
Note: Top 13 coloring foods; minimum threshold 400 launches in 2022

Opportunities



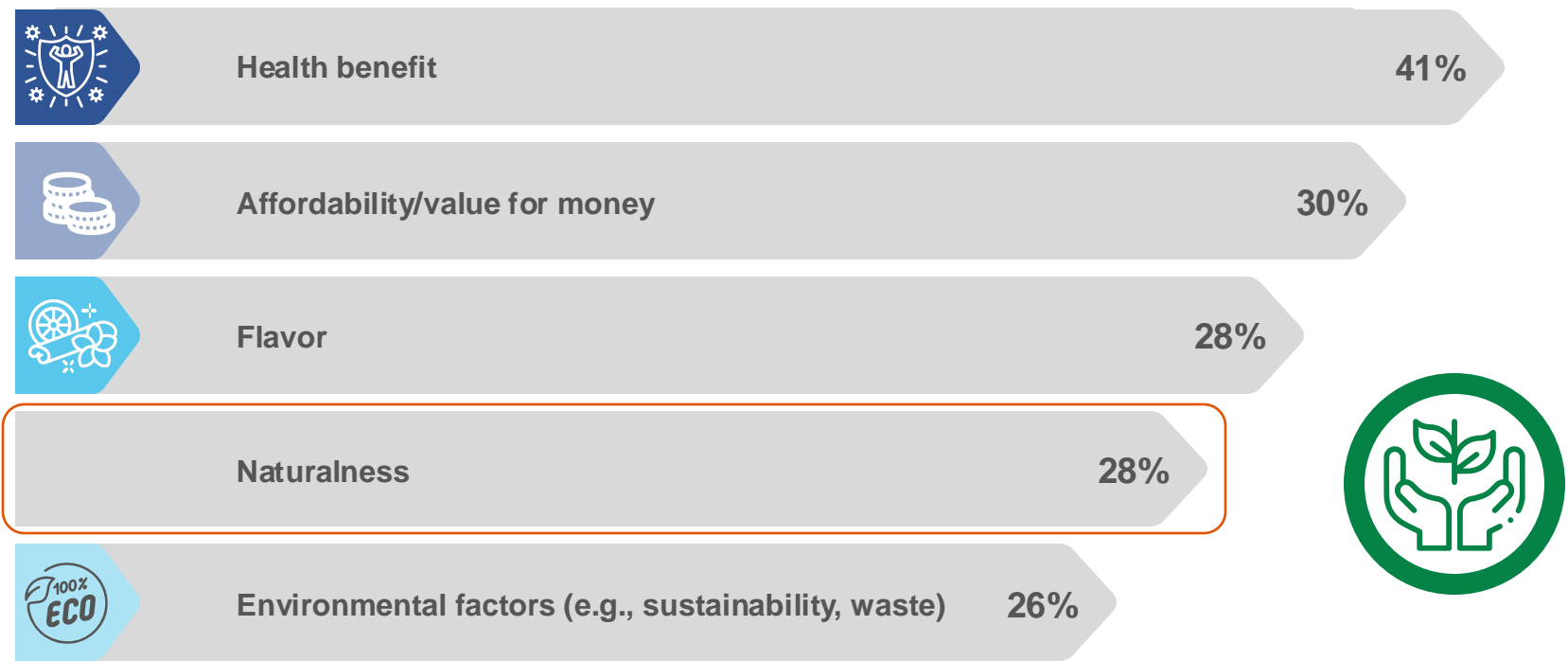


1. Create connections with natural through color

Health, value, taste outpace natural needs

- When asked about where they think food and beverage manufacturers should concentrate their innovation efforts, naturalness was ranked joint third (alongside flavor) among the most important factors, named by more than 1 in 4 global respondents. Highest response rates for naturalness were found in Mexico, Spain, Germany and Brazil, while older consumers over-indexed the young in their demands for more natural innovations.

Figure 10 | Considering food and beverage, which aspects do you think should drive the development of new products the most? Select up to three (Top responses) (Average: 11 countries) (2023)

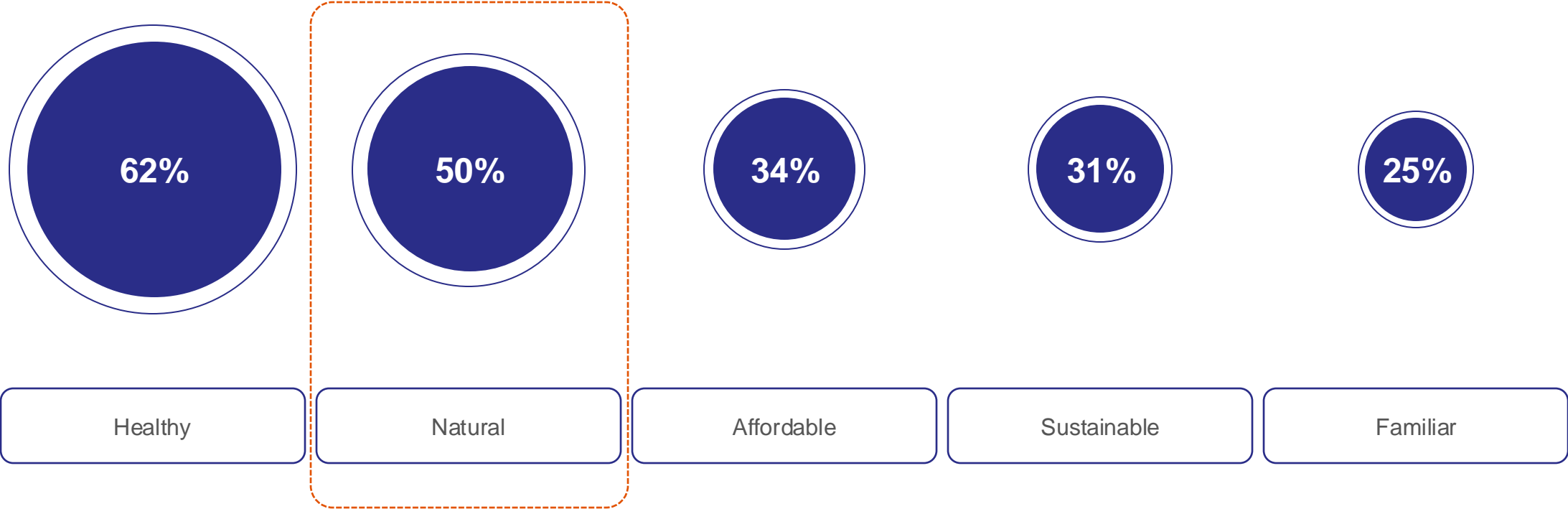


Source: Innova Trends Survey 2023

Intense focus on transparency continues to zoom in on ingredients

- Although naturalness was ranked behind affordability in overall demands for innovation, when consumers are asked more specifically about ingredients rather than finished food and beverage, it becomes much more important and is second only to health as the most desirable aspect.

Figure 11 | It is most important that ingredients are... Select up to three (Average: 11 countries) (2022)

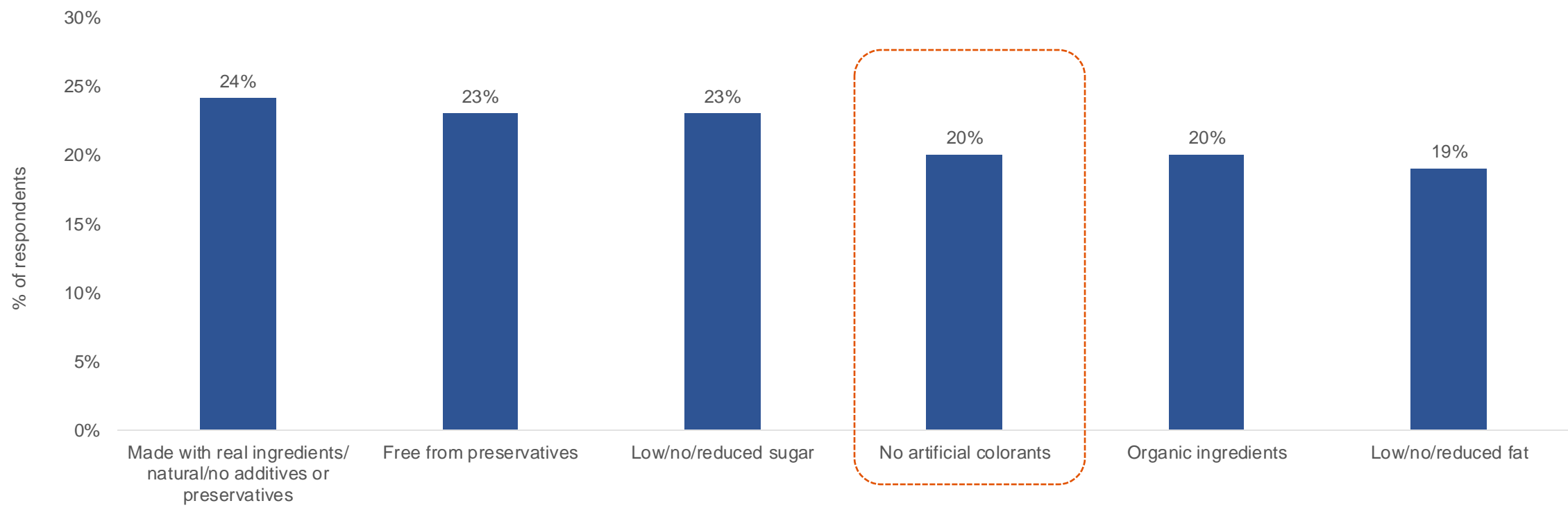


Source: Innova Sustainability, Food Tech & Packaging Survey

Colors have a bad rap among additives

Figure 12 | Which ingredient claims are most appealing to you? Select up to three (Top responses) (Average: 11 countries) (2022)

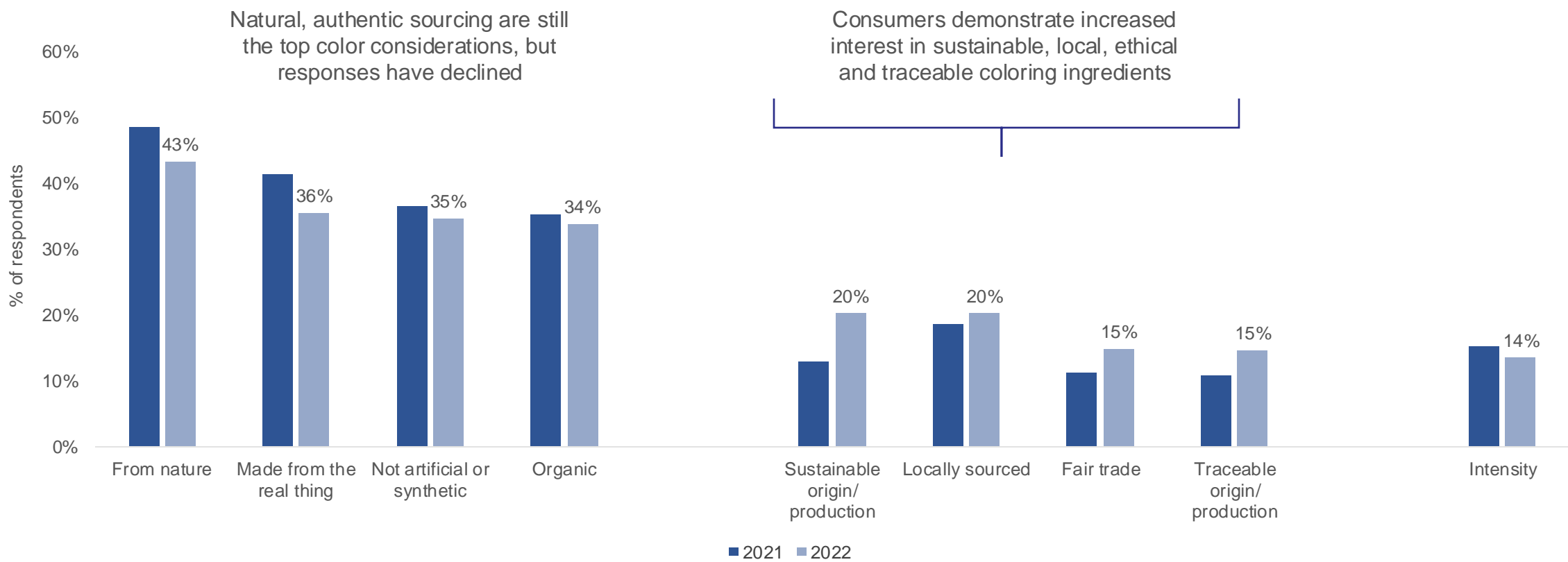
Out of 20 ingredients claims surveyed, the absence of all kinds of additives was the single most desirable statement for consumers. Preservatives appear to be the least acceptable of specific additives, but 1 in 5 also named colorants as a concern. Demand for “real” ingredients also supports the push toward coloring foodstuffs as alternatives to more traditional additives.



Source: Innova Sustainability, Food Tech & Packaging Survey

Leverage sustainability to reinforce natural connections

Figure 15 | What are the most important aspects of natural food colors to you? (Average: 11 countries) (2021-2022)



Sources: Innova Flavor Surveys 2021 and 2022

Coloring foods are proving their worth in products with a strong natural image



Muller Bio Primo Limited Edition Grapefruit Hops Bonbons

Germany, Mar 2023

Filled chewy candies with a grapefruit and hops flavor. Certified organic. With aronia juice concentrate as a coloring.



Nuisance Pink Grapefruit And Basil Sparkling Botanical Drink

United Kingdom, Feb 2023

A sparkling, all-natural botanical drink flavored with pink grapefruit and basil. With purple carrot concentrate and turmeric extract as colorings.

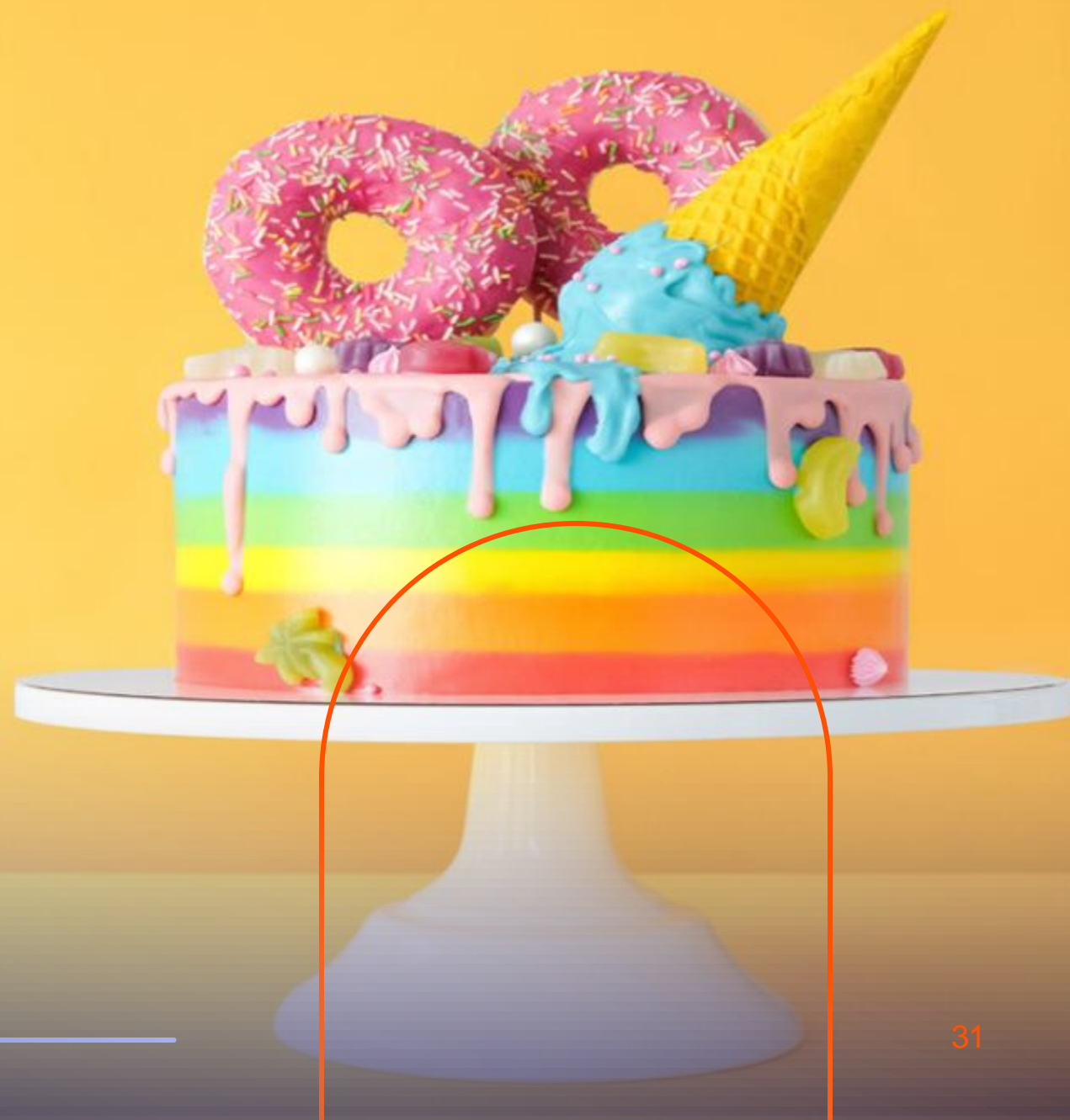


Cascadian Farm Organic Fruity Crispy Rice Cereal

United States, Nov 2022

A colorful, organic and non-GMO rice cereal. Supports the Nature Conservancy to restore farmland. With carrot concentrate, pumpkin concentrate, apple concentrate, blueberry juice concentrate and annatto used as colorings.

Source: Innova Database



2. Indulge the imagination

Younger consumers seek excitement through unique flavors, therefore colors

1 in 3

Generation Z and Millennial consumers in Canada & US are looking for new/unique/different flavors in food and beverage



United States, Feb 2024

“The new **galaxy-inspired Oreo Space Dunk** cookies feature layers of **blue and pink marshmallow-flavored creme** infused with popping candy to provide a bursting sensation with each bite!”

As consumers embrace the joys of color, suppliers must add the value

- Today’s consumers – especially the young– are increasingly drawn to vibrant or unusual colors, but this must be balanced with personal and environmental interests. At a personal level, health demands are pushing the market toward ever more natural formulations, which continues to bode well for coloring foods, while interest in environmental impact will intensify, leaving ingredients companies with the challenge of delivering more sustainable choices. As highlighted in Innova’s Top 10 Trends, consumers are more likely to splurge small but to consider their values at the same time.



- The emphasis is shifting toward splurging small and seeking small pleasures such as those offered by food and drink in place of luxury spending.

A novel experience through color can be an affordable mood booster.



- There is ever greater reluctance to compromise on personal values or preferences when making food choices.

Naturalness and eco credentials are a strong theme for colors.

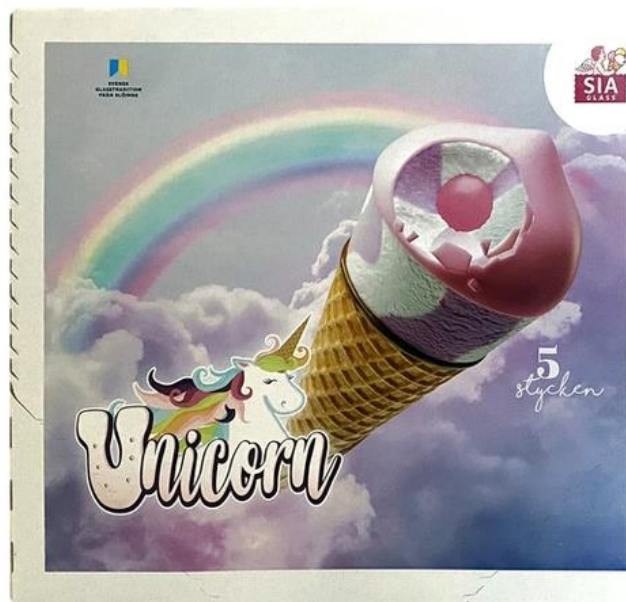


Source: Innova Market Insights

Embrace color as a flavor-conduit

Unicorn “flavor” phenomenon

- Within the past 10 years or so, a number of suggestive flavors have appeared on the market, each identified by color and appearance alone. For example, unicorn-flavored products certainly do not taste of horse but are instead defined by pastel colors of blue, pink, turquoise and mauve and tend to feature such super-sweet flavors as strawberry, cherry, cotton candy or marshmallow. Products of this kind often only carry flavor detail in the small print, with the “unicorn” descriptor considered suggestive enough of what to expect from the taste. There have been similar moves with marine themes, such as mermaid concepts or rainbow flavors, which combine multiple fruit tastes (often unspecified).



Sia Glass Unicorn Ice Cream Cones

Sweden, Feb 2023

A pack of five unicorn ice cream cones comprising blueberry and raspberry flavored ice cream in waffle cones with raspberry ripple core and a pink coating. Contains beetroot red coloring, as well as black carrot and elderberry extracts.



Bake It Unicorn Cupcakes Mix

Belgium, Nov 2022

A home baking mix for the preparation of unicorn cupcakes in marbled purple and pink colors with turquoise icing. Flavors are never specified. Colors used include chlorophyllin, carmine, carotenes and spirulina.

Source: Innova Database

Fantasy flavors have strong roots to color

Fastest-growing fantasy flavors in new food and beverage launches
(Canada & US, CAGR 2019 – 2023)

+19%



Moon

+5%



Rainbow

+4%



Cosmic



Canada, Mar 2024



United States, Oct 2023

Sources: Innova Database; [Clear Cut Hero](#)

“Out-of-this world” flavor experience is equally colorful



Jeni's launched 4 **intergalactic ice cream** flavors for the solar eclipse

“Inspired by a **fictional flight through the galaxy**. Where we gathered all of the alien fruits we could find and transformed them into colorful, **cosmic ice creams**.”

“Tastes like **candied violet** and **marshmallows**. Almost like **cereal milk!**”

Supermoon was created from the **moon dust** that **glitters** in the sky during a **harvest supermoon**.”



United States, Mar 2024

A close-up photograph of a person's hands holding a black smartphone, capturing a picture of a gourmet coffee and dessert arrangement. The arrangement includes a white cup of dark coffee on a saucer, a small bowl of colorful candies, a round chocolate-topped cake, and several macarons in pink, yellow, and white. The background is a light-colored wooden table with more of the same items, slightly out of focus.

3. Follow new, colorful paths to find value

Foodservice may be more relevant for colors than flavors

- Some of the most Instagrammable foods are found in the foodservice market, with restaurant chains having more scope for experimentation with color and appearance than FMCG brands. Although taste is at the heart of menu developments, more and more restaurants are recognizing the benefits they can accrue by introducing colorful products that appeal to the Instagram generation, delivering free marketing that traditional advertisers can only dream of.



Krispy Kreme Colorful Donuts for St Patrick's Day and Valentine's Day

Krispy Kreme often changes up its donut offering on a seasonal basis. Color choices for frostings are very much a part of these seasonal or other limited edition developments.



Carvel KitKat Duos Sundae Dashers

These sundaes, inspired by KitKat's Duos products in the US, use color to differentiate the Strawberry & Dark Chocolate and Dark Chocolate Mint variants.



"Perfectly refreshing with bright tart notes of pomegranate and a pop of color worthy of any Instagram in-feed post."

Wendy's Lemonades

Wendy's often adds limited edition lemonades to its seasonal line-up. In 2022, it offered Sunburst Melon alongside its standard natural, strawberry and pineapple mango flavors. In 2023, it developed a Blueberry Pomegranate edition, "worthy of any Instagram post".

Sources: Innova Market Insights, [Krispy Kreme](#), [Carvel](#), [Wendy's](#)

Striking, bold or unexpected colors add value



Pin Power in Nature Hibiscus Tea

Turkey, Mar 2023

A sugar-free tea drink with 0.1% hibiscus extract. It also contains added black carrot concentrate to enhance the color.



Oreo Blackpink Pink Colored Sandwich Cookies with Dark Chocolate Flavored Cream

Indonesia, Dec 2022

A special edition of Oreo sandwich cookies with a tie-in to the South Korean girl band Blackpink. Contains carmine to give the pink color of the cookies.



Florestal Zolle Green Apple Flavored Lollipops

United States, Mar 2023

A pack of 24 individually wrapped green apple flavored lollipops. They contain tartrazine and brilliant blue to create the bold green color.

Source: Innova Database

Using color to identify/enhance flavor



3 Loves Functional Beverages

United States, Mar 2023

A range of three functional drinks, which use organic fruit and vegetable juices for color. Color helps to differentiate the Peach (Happy Head with ashwagandha), Rose (Glow Up with hyaluronic acid) and Dark Cherry (BDE with rhodiola) flavors/varieties.



Sour Punch Easter Straws

United States, Dec 2021

An Easter edition of the sour straws, which come in blue raspberry (blue), grape (purple), fruit punch (red) and lemon (yellow) flavors. They contain a mix of allura red, brilliant blue and tartrazine colorings.



Little Moons Refreshos Mochi

United Kingdom, Jan 2023

Two new varieties of Little Moons mochi using sorbet centers. The Very Berry variant is pink, while the Pineapple & Mandarin style is orange and yellow.

Source: Innova Database

Digital natives are seeking inspiration online

Millennials and Generation Zs are becoming more wedded to online interactions related to food and drink

Figure 1 | Do you agree with the following statement about social media? (Agreement by generation) (Average: 11 countries) (2023)

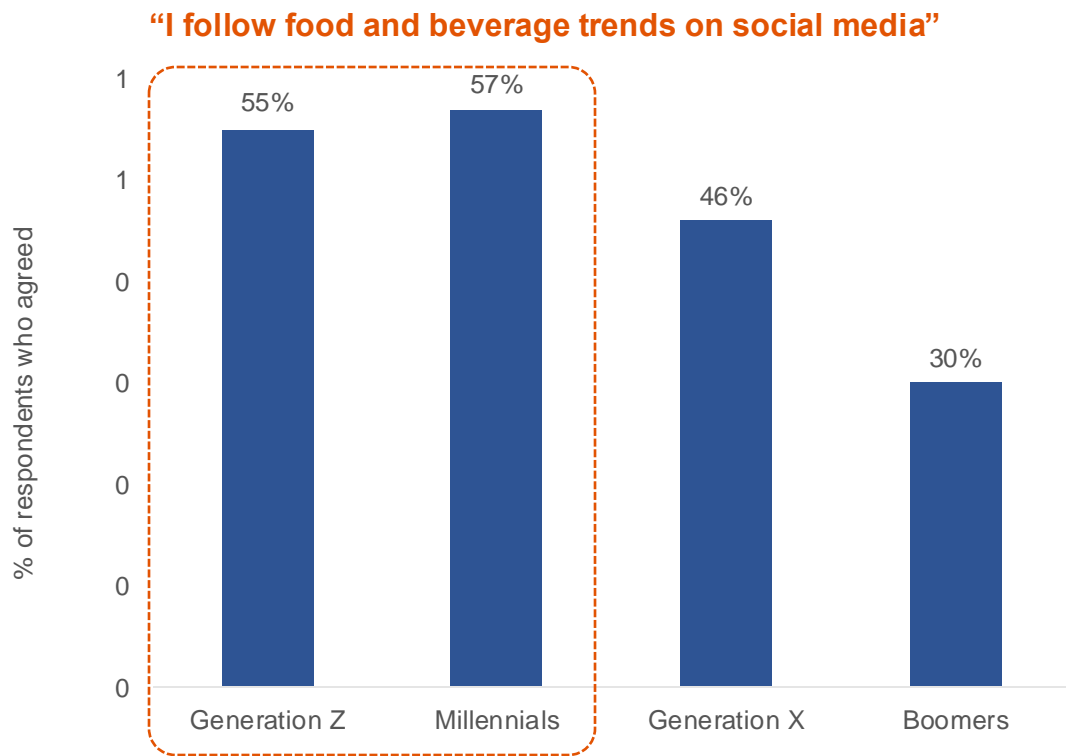


Figure 2 | What online sources of inspiration do you use when purchasing food and beverage products? Select all that apply (Top three by generation) (Average: 10 countries; excludes China) ((2023)

Generation Z		Millennials	
	YouTube		YouTube
	Instagram		Instagram
	TikTok		Facebook
Only 5% don't use any		Only 9% don't use any	
Generation X		Boomers	
	YouTube		YouTube
	Facebook		Facebook
	Instagram		Cooking apps
21% don't use any		41% don't use any	

YouTube and Instagram lead the way for the young. Generation Z is the TikTok generation, significantly over-indexing other age groups for this app. Many Millennials favor Facebook, as do Generation X and Boomers

Source: Innova Trends Survey 2023

Digital world is proving a positive space for color-related promotion

Case study: Pink Sauce goes viral and confidently heads to the retail shelves

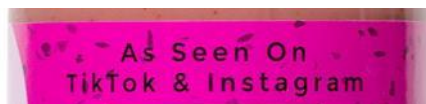
- Pink Sauce is a sweet, spicy and tangy sauce whose color comes from pitaya (or dragon fruit), which went viral on TikTok and Instagram in the summer of 2022. The brainchild of Florida-based Chef Pii (real name Veronica Shaw), it was flagged online as a perfect accompaniment to fried chicken, French fries and veggies. The image generated via social media has been so strong that the sauce has been launched onto the conventional retail market in the US via collaboration with Dave's Gourmet.



Pink Sauce

United States, Feb 2023

A sweet and tangy sauce made with dragon fruit puree, canola oil, coconut cream, garlic, ranch flavor and spices. "From TikTok to table, shock your taste buds with flavor and thrill."



Press coverage has been mixed but extensive

Women'sHealth

What to know about the 'all natural' pink sauce that has gone viral on TikTok

The pretty condiment contains a potentially anxiety-easing ingredient...

BY LAUREN CLARK PUBLISHED: AUG 24, 2022

the spruceEats

What Is the Pink Sauce Controversy on TikTok?

A lot of people are mad about a \$20 sauce they bought on the internet.

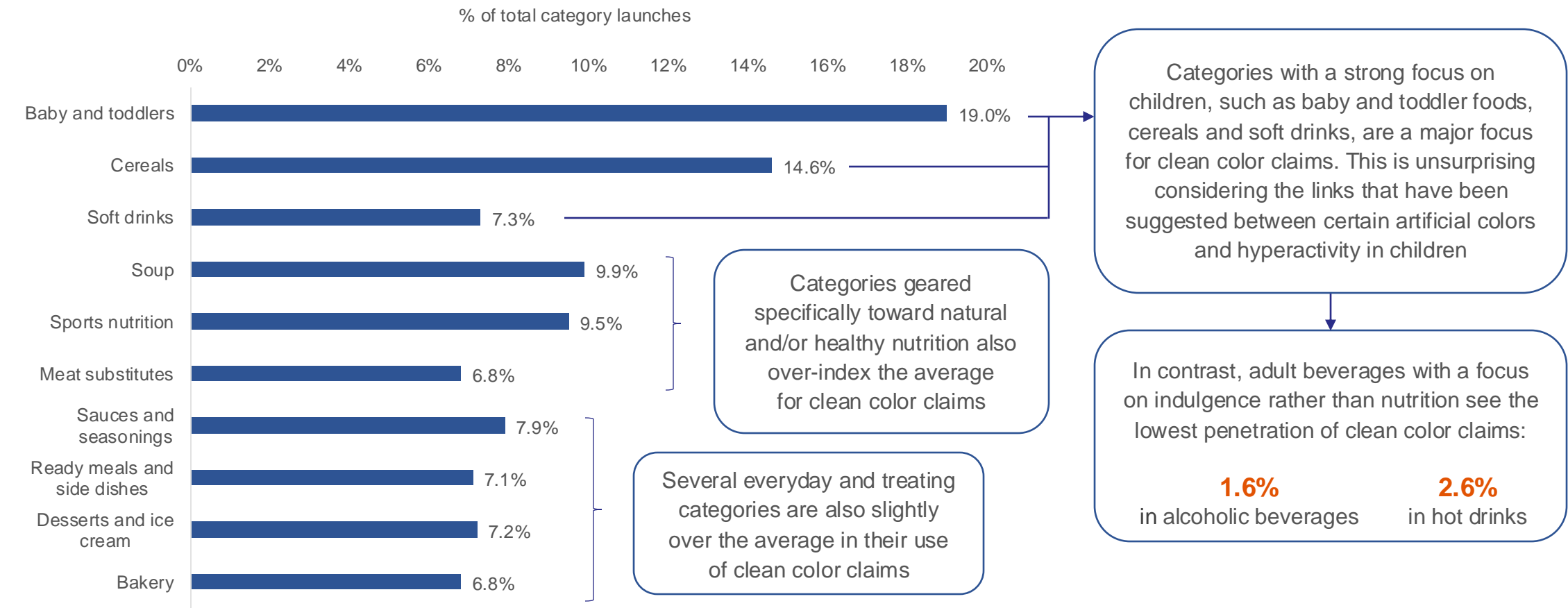
By Ashley Abramson | Updated on 12/22/22



Sources: Innova Market Insights, [Pink Sauce](#), [Women's Health](#), [The Spruce Eats](#)

Color claims and kids

Figure 18 | Global penetration of clean color claims* by category (Top 10) (2022)



Source: Innova Database
*Based on free text searches of product claims and features

Color is very important in kids’ foods, brands keep it clean

Adopting naturals or coloring foods for additive-free positionings



Nestle Rowntrees Safari Mix

United Kingdom, Mar 2023

Healthier gummy sweets with real fruit juice and 30% less sugar than similar sweets. No artificial colors, flavors or preservatives. With beta-carotene and chlorophylls, plus black carrot, safflower, radish and spirulina concentrates.



Yoplait Petit Miam Strawberry Yoghurt

Hong Kong (China), Mar 2023

A children’s yogurt made with real fruit and “the goodness of milk”. Made in Australia and contains no artificials. With black carrot and blackcurrant concentrates for coloring.

Source: Innova Database

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