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Bringing blue to life:
Natural *color* for a
bright future

[Blue explainer download](#)

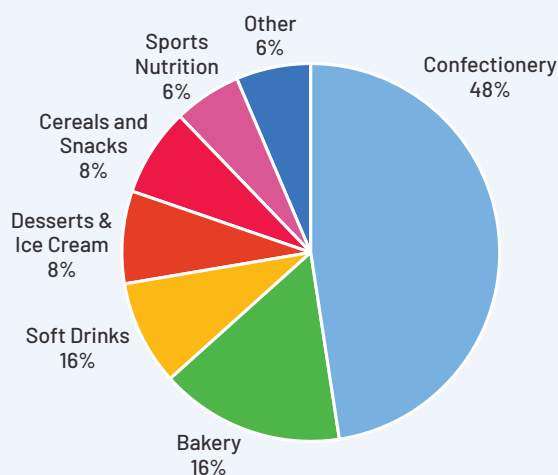
Welcome to the world of blue foods!

Blue is a color that captures the imagination—evocative of summer skies, the depths of the ocean, and, increasingly, the vibrant world of food and beverage. In the realms of sweet treats especially, blue holds a special place: it's eye-catching, playful, and often associated with novelty and mystery. From shimmering candies to velvety frostings, blue not only adds visual excitement but helps shape how we experience flavor and fun.

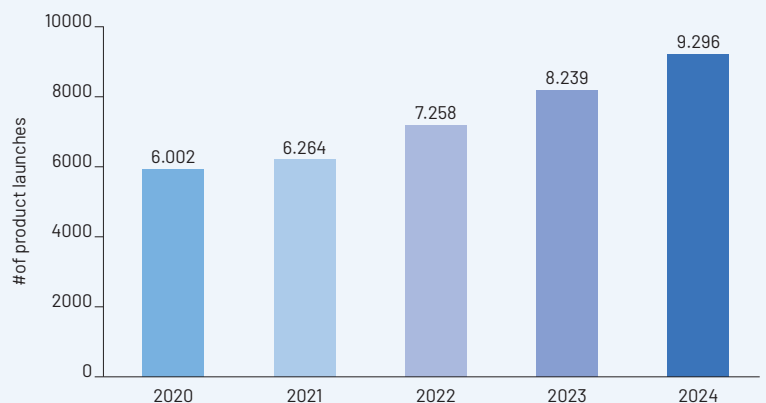
Traditionally, much of the blue we see in food has come from artificial sources. But the world is shifting. The regulatory and consumer landscape is changing and the demand for naturally derived blues is increasing. But with multiple options for natural blues, it can be hard to know which to use.

This explainer sets out to make blue simple: exploring the significance of blue in food, the consumers who like it, and the natural options available.

Confectionery has the largest number of launches containing a blue color



+11.56%
CAGR 2020-2024 number of product launches containing a blue color



Source: Innova new launch database, Jan 2020-Dec 2024 – all industries, launches containing brilliant blue, indigotine, patent blue, spirulina, gardenia or jagua

The blue consumer – Oterra's proprietary data



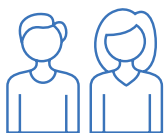
Colors play a key role in the food industry, enhancing appeal and flavor. In 2024, Oterra surveyed 10,000 consumers in 10 different countries exploring their reactions to product colors in savory foods. As experts in color, we saw that consumers were curious about elevating their food experiences and set out to see how far they are willing to go. Blue, often considered an unusual shade, was found to be an intriguing choice for trendy savory foods.



...blue is a color of contradictions in flavor expectations. It is most often associated with blueberry flavors, even in savory applications, but is also strongly associated with saltiness, particularly in Latin America.

Who is the blue consumer?

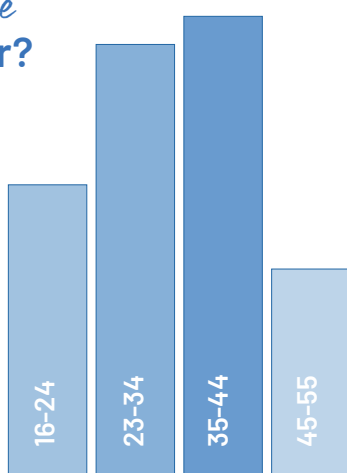
Gender



55/45

Males

find blue food
slightly more
appealing
than women



73%



find blue foods
appealing overall



21%

of blue food fans
will admire the
presentation of their
food before eating it

Consumer reasons for wanting to try blue foods



40%
are curious about flavor

23%
like to try new food trends

24%
like to smell food to
appreciate its aroma



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Spirulina



Spirulina, *Arthrospira platensis*, is a blue-green micro-algae. The blue pigment in spirulina is phycocyanin. It is a water-soluble pigment that is easily separated from the oil soluble green and yellow pigments also contained in the micro-algae. It is a bright and bold blue comparable to Blue 1/Brilliant blue in shade. The water soluble blue can easily be blended with bright yellow and red pigments to make green and purple shades. From a regulatory standpoint, it is widely approved across the globe.

In order to grow, spirulina requires light, nutrients and warmth with optimal water conditions around 25-30 °C / 77-86 °F. Traditionally, spirulina for commercial use is grown in open ponds in warm climates.

Through an exclusive partnership with Vaxa, Oterra has developed Arctic Blue. Utilizing high-tech and environmentally positive production methods, spirulina is grown in Iceland, resulting in superior spirulina.



Scan the code
and learn more
about spirulina.



Jagua blue

The jagua fruit, *Genipa americana*, also known as 'huito', grows in the rainforests of South America, Southern Mexico and the Caribbean islands. Jagua fruit juice is transparent but turns dark, denim blue over time. This process can be accelerated by exposing the juice to heat and amino acids. These blue pigments are genepin polymers.

Traditionally, the intense blue color has been used as a dye for textiles and skin, and for medicinal purposes by indigenous people. But jagua's excellent light, heat and pH stability make it an ideal source of natural blue for a range of food types.

Oterra's product, Jungle Blue, is produced in Colombia in partnership with Ecoflora Cares. This partnership produces excellent stable food colors, but more importantly brings environmental and social benefits to local Colombian people.



Scan the code
and learn more
about jagua blue.

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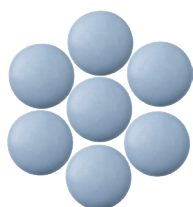


Gardenia blue

Gardenia blue, *Gardenia jasminoides*, is an evergreen flowering plant in the coffee family. Often known as 'cape jasmine' it is native to the sub tropical and northern tropical regions of the far east. The fruit of the gardenia plant can be used to produce two food colorants:

- Crocin/crocetin - yellow
- Genepin polymers - blue

Whilst gardenia blue enjoys good stability to heat and pH, its resistance to light is application dependant. Gardenia blue is commonly used in Asian countries, but it's use is regulatory restricted in other regions.



Blues for food... at a glance





		Blue 1 Brilliant blue	Blue 2 Indigo carmine	Spirulina	Jagua blue	Gardenia blue
						
		Artificial	Artificial	Natural	Natural	Natural
						
		3 - 7	3 - 7	4 - 7	3 - 7	3 - 7
		Good	Good	Sensitive	Good	Good
		Good	Good	Sensitive	Good	Good
		\$	\$	\$ \$ \$	\$ \$	\$ \$
	EU	✓	✓	✓	✗	✗
	US	✓	✓	✓	✓	✓
	Codex	✓	✓	✓	✓	✗

*Galdieria and butterfly pea based blue solutions are not included in the above assessment.
Oterra does not currently offer these pigments.*

Technical suitability

The table below shows applications where each colorant will function from a technical perspective. Not all applications and pigments are approved in all regions. Check local regulations or get in touch with us before use.

- ✓ - Great solution
- ! - Proceed with caution
- x - Unlikely to perform

		Spirulina	Jagua blue	Gardenia blue
Confectionery 	Gummies/jellies	✓	✓	✓
	Hard candy	✓	✓	✓
	Marshmallow/foams	✓	✓	✓
	Chocolates/compounds	✓	!	!
	Toffee/fudge	x	✓	✓
	Dragees	✓	✓	✓
	Gum	✓	!	!
Bakery 	Baked goods	x	✓	✓
	Icings/frostings	✓	✓	✓
	Fillings/jams	x	✓	✓
Beverage 	RTD soft drinks	x	✓	✓
	Energy drinks	x	✓	✓
	Powdered soft drinks	✓	✓	✓
	Alcoholic beverages	x	!	!
	Hot drinks	x	✓	✓
Desserts/ Ice Creams 	Ice-cream	✓	✓	✓
	Water-ice	✓	✓	✓
	Mousse/puddings	✓	✓	✓
Cereals and Snacks 	Extruded cereals/snacks	x	✓	✓
	Hot cereals	x	✓	✓
	Seasonings	✓	!	!
	Tortilla chips	x	✓	✓
Sports nutrition 	Sports powders	✓	✓	✓
	Supplements	✓	✓	✓
	Sports bars	!	✓	✓
Dairy 	Milk drinks	!	✓	✓
	Yoghurts	!	✓	✓
Savory 	Ready meals	x	✓	✓
	Sauces	x	✓	✓
Pet food 	Wet canned	x	✓	✓
	Kibble	x	✓	✓
	Baked treats	x	✓	✓

Green and purple



A range of natural blue pigments opens up a range of natural green and purple blends.

By combining a natural blue with yellows like turmeric or safflower, a whole spectrum of greens, from deep emeralds, to bright, acid greens can be produced.

Blending with a bright red like black carrot or Hansen sweet potato™ yields a range of purple shades from deep amethyst to bright violets.

Whatever the application, there's a blue, a green and a purple for you.



Contact us to discuss
the option and find the
perfect solution for you.

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Helping you do
great things with
natural colors

Together
towards *natural*



Source: Oterra proprietary savory color insights 2024

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