



# Converting from artificial to *natural* colors

How to make the change  
without making a difference



# Natural colors that keep your brand looking good



A familiar and recognizable color is a vital element for brands. Color attracts attention, creates expectations of taste, and signifies moods to customers. Why risk messing with a brand's color?

As many food and beverage producers in the US are finding out, the choice may not be up to them in the future. Consumers are demanding cleaner, more natural labels, while state and federal legislation could rule out the use of most artificial dyes. This rapidly changing environment has put the focus on natural color alternatives that meet customer and legislative demands.

You can't fool consumers when their favorite snack is 'not quite right' when it comes to colors. Oterra has decades of experience helping some of the largest food and beverage brands convert to natural while keeping faith with the brands' values – but with the added advantage of being artificial-free.

## Consumer concerns

The Natural Colors Association (NATCOL) released a study in May 2024\* that looked at US consumer perceptions of natural food colors.

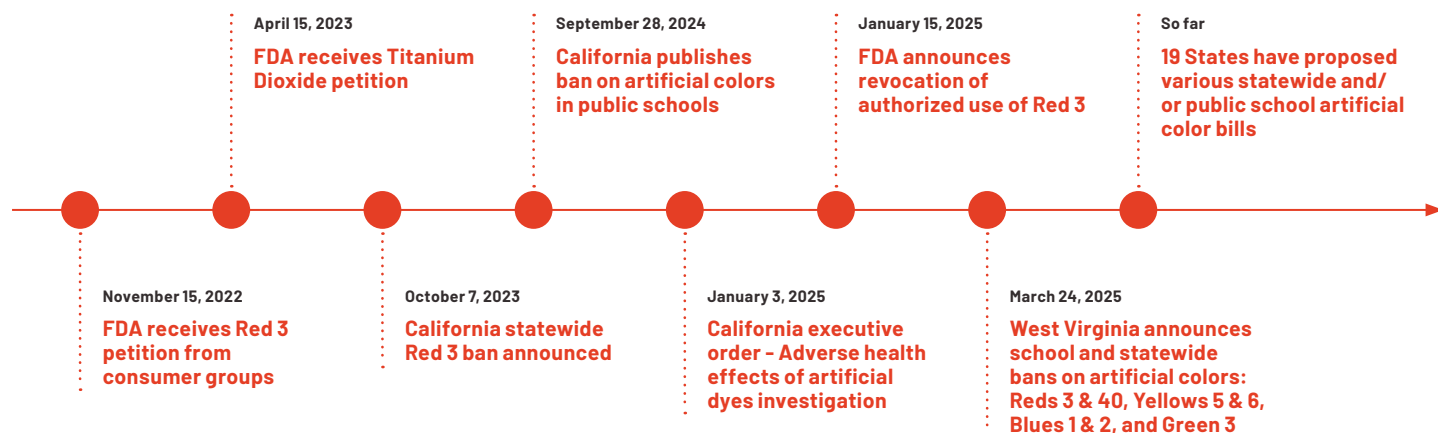
The appearance of food and beverage ranked in the top five among consumers.

While the specific awareness of color was lower compared to other components such as taste, price, protein content, and sugar content, there was a significant preference for natural colors: 7 out of 10 consumers accepted natural coloring in their food and beverage and expressed positive connotations like 'healthy', 'safe', 'good', 'sustainable' and 'appealing' in products containing them.

\* NATCOL US Consumer Food and Beverage Color Attitudes Study, 2024

















## Legislation is moving quickly\*













\* Timeline updated March 25, 2025

# Converting *red* from Red 40

	Powder beverages	Frostings	Gummies	Hard panned candy	Icing	Sponge cake	Snack seasoning
Artificial color	 FD&C Red 40 Lake	 FD&C Red 40 Lake	 FD&C Red 40	 FD&C Red 40	 FD&C Red 40	 FD&C Red 40	 FD&C Red 40
Natural color	 Sweet potato	 Red beet	 Sweet potato	 Sweet potato	 Sweet potato + black carrot + paprika	 Sweet potato	 Sweet potato
Benefits of natural raw material*	Bold Highly concentrated Easy to use No dephasing Uniform coloring Good plating	Magenta shades Suitable for neutral pH products Liquid form Cost efficient	Bright blueish red to red shades Heat, light, low pH and oxidation stable Flavor neutral Ambient storage conditions possible	Unique bright, red shades Excellent for panned products Flavor neutral Heat, light, low pH and oxidation stable Ambient storage conditions possible	Pinkish red shade Vegetable based alternative to carmine Stable to heat & light Liquid form; powders available	Unique pinkish-red shade Heat, light, and oxidation stable Minimally processed	Strong, intense color Uniform coloring/plating No dephasing on colored powder Easy to use















# Converting *pink* from Red 3

	Gummies	Hard panned candy	Icing	Compressed tablets	Sprinkles
Artificial color	 FD&C Red 3	 FD&C Red 3	 FD&C Red 3	 FD&C Red 3	 FD&C Red 3
Natural color	 Sweet potato <sup>1</sup>	 Sweet potato	 Hansen sweet potato™	 Red beet	 Red beet
Benefits of natural raw material*	Unique red and pink shades Liquid form; powder available Heat and light stable	Very stable to heat, light, low pH and oxidation Minimally processed/ coloring foods Liquid color	Unique red and pink shades High strength powder, allowing for lower dosage Very stable to heat, light, low pH, and oxidation	Bluish-pink shades Plating with evenly distributed visible particles No pH impact Cost effective Ambient storage	Cost efficient Suitable for neutral pH products No pH impact Ambient storage















<sup>1</sup> Contains Hansen sweet potato™ - Oterra's exclusive variety providing vivid red shades with unparalleled color strength and stability








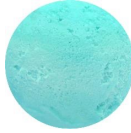








# Converting *yellow* from Yellow 5

	Powder beverages	Frozen desserts	Gummies	Hard panned candy	Icing	Sponge cake	Cereals
Artificial color	 FD&C Yellow 5 Lake	 FD&C Yellow 5	 FD&C Yellow 5	 FD&C Yellow 5	 FD&C Yellow 5	 FD&C Yellow 5	 FD&C Yellow 5
Natural color	 Fungus Riboflavin	 Orange carrot	 Beta carotene	 Turmeric	 Turmeric	 Beta carotene	 Turmeric
Benefits of natural raw material*	Vibrant shade Heat, low pH and oxidation stable Cost efficient High strength color	Heat, low pH and light stable Flavor neutral formulation Minimally processed/ coloring foods Contains only natural ingredients	Light, low pH, and heat stable Transparent in gummies Cost efficient	Light, heat and oxidation stable Encapsulated for stability High coloring ability Emulsifier free Liquid form - ready to use	Vibrant shades Heat and oxidation stable Encapsulated for stability High strength powder	Bright yellow shade Heat and light stable Palm oil free Powder or liquid form Easy to dose	Bright yellow shades Heat, low pH and oxidation stable Encapsulated for stability High coloring ability Liquid form

# Converting *orange* from Yellow 6

	Hard candy	Frostings	Gummies	Hard panned candy	Icing	Sponge cake	Cereals
Artificial color	 FD&C Yellow 6	 FD&C Yellow 6	 FD&C Yellow 6	 FD&C Yellow 6	 FD&C Yellow 6	 FD&C Yellow 6	 FD&C Yellow 6
Natural color	 Orange carrot	 Annatto	 Paprika	 Beta carotene	 Paprika	 Paprika	 Paprika
Benefits of natural raw material*	Heat, low pH and light stable Bright shades independent of pH Minimally processed/ coloring foods Contains only natural ingredients	Heat and light stable Liquid form Cost efficient	Heat, low pH, and light stable Acid-proof formulation Transparent appearance in gummies Cost efficient	Bright shades Heat, low pH and light stable Emulsifier free Excellent for panned candies	Heat and light stable Powder form Excellent plating abilities in bakery mixes	Bright shades Heat, low pH, light and oxidation stable Encapsulated for stability High strength Powder form suitable for bakery	Bright shades Encapsulated for high stability Heat, low pH, light and oxidation stable High strength powder

# Converting *blue* from Blue 1 & Blue 2

	Snack seasoning	Frostings	Gummies	Hard panned candy	Icing	Ice cream	Ice cream
Artificial color	 FD&C Blue 1 Lake	 FD&C Blue 1 Lake	 FD&C Blue 1	 FD&C Blue 1	 FD&C Blue 1	 FD&C Blue 1	 FD&C Blue 2
Natural color	 Spirulina	 Spirulina	 Spirulina	 Spirulina	 Spirulina	 Spirulina	 Jagua fruit
Benefits of natural raw material*	Strong, intense color Uniform coloring/plating No dephasing on colored powder Easy to use	Bright blue shades Light and oxidation stable Liquid form	Bright blue shade especially well suited for gummies Light and oxidation stable Liquid form	Bright blue shades Ambient storage possible High coloring content for lower application dosage Powder form Minimally processed/coloring foods	Bright blue shades Minimally processed/coloring foods	Bright blue shades Light stable Ready to use liquid form	Bright indigo blue shades pH, light and heat stable Powder available Ambient storage

# Converting *green* from artificial blends

	Snack seasoning	Frostings	Gummies	Hard candy	Icing	Frozen desserts	Fat fillings
Artificial color	 FD&C Yellow 5 Lake + FD&C Blue 1 Lake	 FD&C Yellow 5 Lake + FD&C Blue 1 Lake	 FD&C Yellow 5 + FD&C Blue 1	 FD&C Yellow 5 + FD&C Blue 1	 FD&C Yellow 5 + FD&C Blue 1	 FD&C Yellow 5 + FD&C Blue 1	 FD&C Yellow 5 + FD&C Blue 1
Natural color	 Spirulina + turmeric	 Spirulina + turmeric	 Spirulina + turmeric	 Spirulina + turmeric	 Spirulina + turmeric	 Spirulina + turmeric	 Spirulina + turmeric
Benefits of natural raw material*	Strong, intense color Uniform coloring/plating No dephasing on colored powder Easy to use Ambient storage	Range of green shades possible Stable to oxidation Liquid and powder forms available	Range of green shades possible Stable to oxidation	Range of green shades possible Stable to oxidation & heat	Heat and light stable Powder form Excellent plating abilities in bakery mixes	Range of green shades possible Stable to oxidation	Oxidation stable Easy to disperse in oil/fat applications

\* Benefits may vary according to the product used.

# Useful tips to ensure a *smooth* conversion

Our team of experts in applications, innovation and regulatory affairs have an extensive experience in helping our customers. Whatever your challenges, we have solved them before and we are here for you all the way – let us help make natural colors easy.

## Seven considerations when working with natural colors



### Regulatory compliance

Our Regulatory Affairs team is here to assist in labeling and documentation needs



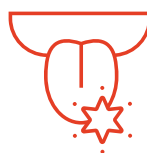
### Macro ingredients

Sugars, sweeteners, proteins and fats can impact pigment stability and shade



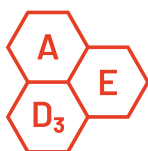
### Acid to base

Color functionality is dependent on pH and can cause shades to shift and precipitate



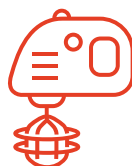
### Flavor

Flavors and colors can interact together to break down encapsulations and emulsions



### Fortification

Some vitamins and minerals can degrade color leading to color loss and precipitation, other vitamins can stabilize pigments



### Production processes

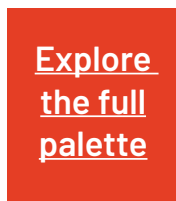
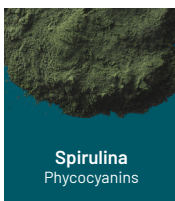
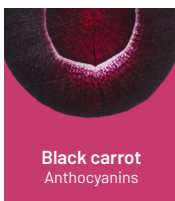
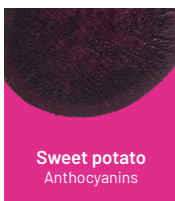
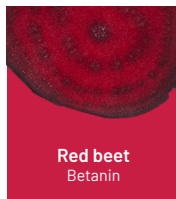
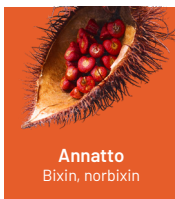
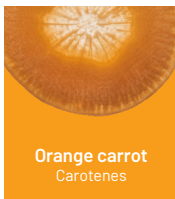
Shear, heat, and headspace impact color performance and longevity in a finished product



### Packaging

Some packaging materials are more susceptible to staining from certain pigments

## Some of the popular raw materials sourced from nature



Together  
towards  
*natural*  
Contact us