



# EXBERRY® Coloring Foods

Plant-based colors for plant-based ground meat products

GROWING COLORS

EXBERRY®

Deliver **spectacular shades** in plant-based burgers, minced meat, and meatballs with clean-label color solutions

Did you know?

EXBERRY® can be used to create red meat alternatives that change color when cooked

Why color matters in ground meat alternatives

Alternatives to ground meat products have always been at the forefront of the plant-based meat industry. Manufacturers have developed burgers, minced meat, and meatballs that almost perfectly mimic the taste and texture of meat.

However, a recent review of studies into plant-based meat found that appearance is also vital to product acceptance, with meat substitutes needing to replicate the way meat changes color during the cooking process.<sup>1</sup>

## Features

- Highly realistic color shades
- Clear and clean label declarations
- Guaranteed supplies all year round
- Fully traceable crops
- Sustainable production methods
- Exceptional customer support

## Demand for simple, familiar ingredients

A 2022 study on consumer perceptions of plant-based burgers showed the importance of clean labels. It found that vegetarians and flexitarians are significantly more concerned about the additives in food compared to omnivores. According to the research, the use of simple and familiar ingredients can increase product authenticity, with the presence of “chemical sounding” names perceived as risky and undesirable by many consumers.<sup>2</sup>

As such, it is essential to use coloring ingredients that meet consumer perceptions of a healthy product.



EXBERRY® Shade	Raw material	Heat stability	pH dependant	May need ascorbic acid	Available as powder
EXBERRY® Shade Brilliant Orange	Pepper, carrot	✓	✗	✓*	✓
EXBERRY® Shade Red	Radish, carrot	✓	✓	✗	✓
EXBERRY® Shade Vivid Red	Carrot, blackcurrant	✓	✓	✗	✓
EXBERRY® Shade Fiesta Pink	Beetroot, carrot	(✓) <sup>***</sup>	✗	✓*	✓
EXBERRY® Shade Brown	Caramelized carrot, carrot	✓	✗	✗	✗
EXBERRY® Compound Fall Forest Red	Carrot, coconut oil, rapeseed oil	✓**	✓	✗	✓
EXBERRY® Compound Autumn Red	Palm oil, carrot	✓**	✓	✗	✓

\* Depending on application, processing and packaging properties

\*\* This is an encapsulated product with fat, melted with heat and then color changes from a red to a grey purple color

\*\*\* Heat sensitive, performance depending on process conditions

### Raw burger Cooked burger



0.11% EXBERRY® Shade Brilliant Orange  
0.60% EXBERRY® Shade Fiesta Pink  
0.04% EXBERRY® Shade Vivid Red



0.70% EXBERRY® Shade Fiesta Pink  
0.30% EXBERRY® Shade Brown



3.00% EXBERRY® Shade Compound Fall Forest Red  
0.15% EXBERRY® Shade Fiesta Pink  
0.11% EXBERRY® Shade Brilliant Orange

## Future-proof colors from EXBERRY®

EXBERRY® Coloring Foods are created from edible fruits, vegetables, and plants using physical processing methods such as chopping and boiling. Based on the concept of coloring food with food, they provide perfect synergy with the plant-based category and support completely clean and clear label declarations.

In the EU and many other parts of the world, EXBERRY® Coloring Foods can be listed simply as “concentrate of [name of raw materials].”

- ✓ Well-known ingredients
- ✓ No E-numbers
- ✓ Vegan
- ✓ Halal
- ✓ Kosher
- ✓ Non-GMO

## Technical tips

Plant-based colors have varying characteristics including color hues and temperature and pH sensitivities. Selecting the right options will depend on the desired functionality.

Many pink, red, and purple shades contain anthocyanin pigments, which are influenced by the pH value of the application. To achieve the desired shade, it is necessary to understand the pH of your base during processing, cooking, and in the final product. Beetroot concentrates can provide a pH-independent source of pinks, but their betanin pigments are sensitive to heat. For maximum color retention, add ascorbic acid or reduce cooking time or temperature.

GNT provides full support throughout the product development process to ensure you identify the optimal solution for your project requirements.



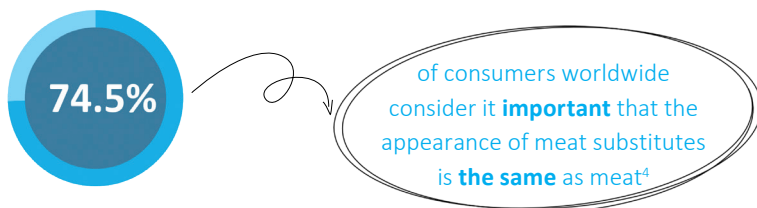
## Tailor-made shades for ground meat alternatives

EXBERRY® can be used to create highly realistic alternatives to ground meat products. By utilizing concentrates from raw materials such as radish, beetroot, carrot, and pepper, EXBERRY® enables developers to accurately mimic the appearance of meat.

## Carrot concentrates that change color

Made from carrot and vegetable oil, the EXBERRY® Compound Red range is a groundbreaking solution that allows red meat substitutes to change from a raw appearance to a cooked appearance when heated.

It can be used alongside other EXBERRY® Coloring Foods to create tailor-made shades for plant-based burgers, minced meat, and meatballs.



<sup>1</sup> He, J. et al. 'A review of research on plant-based meat alternatives: Driving forces, history, manufacturing, and consumer attitudes' Comprehensive Reviews in Food Science and Food Safety (2020) | <sup>2</sup> Birke Rune, C.J. 'Consumer perception of plant-based burger recipes studied by projective mapping' Future Foods (2022) | <sup>3</sup> Kazir, M. & Livney, Y.D. 'Plant-Based Seafood Analogs' (2021) | <sup>4</sup> FMCG Gurus 'Custom Survey - Global and Regional -Meat & Plant-Based Protein' (2022)



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