



Benicaros[®] is a patented, upcycled precision prebiotic fibre, derived from carrot pomace, with studies showing its ability to train the innate immune system for smarter, faster and stronger responses and stimulate beneficial gut bacteria and their metabolites in any type of gut ecosystem. This makes Benicaros[®] a strong ingredient for immune and gut health.



PRODUCT PROFILE SHEET

It all begins with responsible sourcing. Benicaros[®] is made from the patented cRG-I (carrot pectin-derived polysaccharide enriched in rhamnogalacturonan-I) which is extracted from upcycled carrot pomace. What makes this fibre so unique is its ability to train the innate **immune system to respond faster, smarter and stronger, and its capacity to specifically modulate the gut microbiota composition** consistently in every type of gut ecosystem, making the outcomes more predictable.

Unlocking Carrot's Gold

When just eating carrots, the RG-I fibre can remain trapped in the insoluble carrot cell walls, making it difficult for the RG-I fibre to be accessed by the immune system. Thanks to a natural proprietary extraction process, the RG-I fibre in Benicaros[®] is unlocked from the carrot cell walls while preserving its integrity, and making it readily available to interact with the innate immune system and be fermented by the gut microbiota.

Benicaros[®] has 'the right specificity' to consistently stimulate beneficial microorganisms & the production of their metabolites. Scientific research shows that unlike the common prebiotic inulin, Benicaros[®] leads to significantly less gas production and gives consistent effects despite variation in human microbiota composition.¹

FODMAPs are a group of sugars that are not completely digested or absorbed in the intestines. When FODMAPs reach the small intestine, they move slowly, attracting water. When they pass into the large intestine, FODMAPs are fermented by gut bacteria, producing gas as a result. The extra gas and water cause the intestinal wall to stretch and expand. Because people with IBS (Irritable Bowel Syndrome) have a highly sensitive gut, 'stretching' the intestinal wall causes exaggerated sensations of pain and discomfort. **Benicaros[®] SF P has been tested by Monash University in Australia and confirmed to meet the low-FODMAP criteria. As a result, it is considered suitable for consumers following a low-FODMAP diet.**

Product Advantages

- ✓ **Clinically researched to accelerate the natural immune system**
Trains the immune system for faster, smarter and stronger responses.
- ✓ **Precision Prebiotic**
Predictable and consistent outcomes.
- ✓ **Proprietary extraction process**
Unlocks cRG-I (carrot rhamnogalacturonan-I) from carrot cell walls.
- ✓ **Natural & Plant-Based**
- ✓ **Upcycled**
Produced by upcycling carrot pomace from juice production.
- ✓ **Proprietary water-based extraction technology**
Free from organic solvents.
- ✓ **Good Solubility**
- ✓ **Good Organoleptic Properties**
No negative impact on taste, odour, or texture of the finished product.
- ✓ **Heat and pH stable**
- ✓ **Safe**
Positive Opinion by EFSA. Novel Food Approval for the Benicaros[®] SF Pure Grade.
- ✓ **Patented**
Protected by a broad portfolio of intellectual property.
- ✓ **Kosher and Halal**
- ✓ **Gluten-Free**
- ✓ **Easily added to various delivery forms**
Including capsules, tablets, sachets and liquid applications.
- ✓ **Meets the low-FODMAP criteria**

Research

Research supporting immune health

Benicaros[®] (300mg/daily serving size) was shown to be effective in a single centre, randomised, double-blind, placebo-controlled study conducted with 177 healthy adults (18-65 years). Benicaros[®] was demonstrated to accelerate and augment innate immune and anti-viral responses to an immune challenge with a common cold infection after 8 weeks supplementation². The study also demonstrated that Benicaros[®] was able to reduce symptom severity to this acute respiratory viral infection by up to 33% and reduce the duration of symptoms by up to 3 days³. The study concluded that Benicaros[®] offered clinically relevant benefits to immune challenges caused by an infection. With this study it was also demonstrated that cRG-I ameliorated the negative effects of a common cold infection on wellbeing, as assessed



by a validated questionnaire scoring symptoms and quality of life attributes³.

Fig. 1
Benicaros® Response to Controlled Virus Challenge
(Lutter et al. 2021 ; McKay et al. 2022)

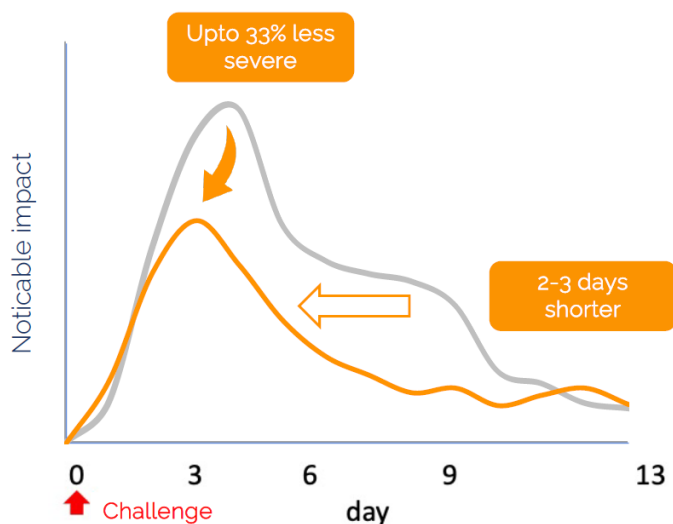
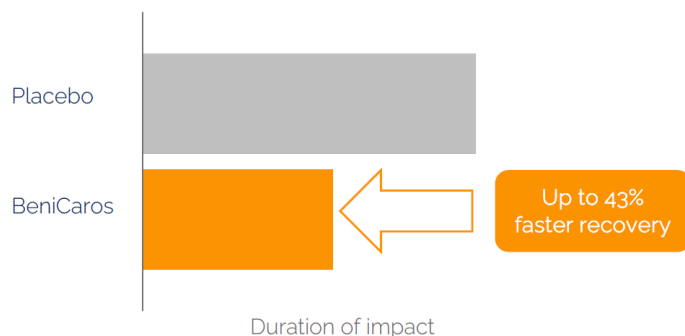


Fig. 2
Benicaros® Response to Controlled Virus Challenge
(Lutter et al. 2021 ; McKay et al. 2022)

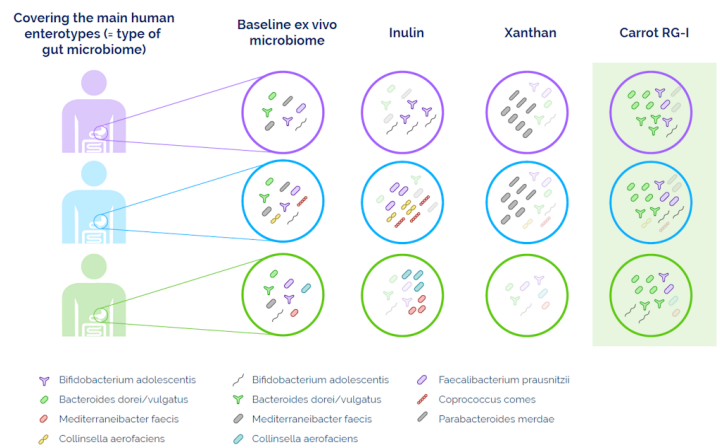


Research supporting gut health

A study⁴ compared the prebiotic effects of three dietary fibres of various specificity (i.e. structural complexity) on the intestinal microbiota of healthy adults. Fecal samples from 24 subjects were incubated for 48 hours with the medium-high specificity fibre Benicaros® (300mg and 1500mg), 1500mg of inulin (a low specificity fibre) or 1500mg of xanthan (a high specificity fibre). The SIFR® high-throughput ex vivo validated gut digestion and fermentation simulator that generates predictive insights for clinical findings was used to measure changes in gut microbiota composition and function.

Fig. 3

Benicaros® Stimulation of Gut Microbiome vs Others
(Van den Abbeele et al. 2023)



Results:

- Benicaros® significantly increased a broad spectrum of operational taxonomic units (OTUs) belonging to Bifidobacteriaceae, Bacteroidaceae, Acidaminococcaceae, unclassified Clostridiales, Lachnospiraceae, Ruminococcaceae, and Veillonellaceae, including OTUs of health-related species such as Bifidobacterium longum, Bifidobacterium adolescentis, Anaerobutyricum hallii and Faecalibacterium prausnitzii.
- Benicaros® selectively stimulated taxa or species of bacteria that were consistently present among human adults, resulting in lower microbiota composition differences between subjects. This homogenising effect of Benicaros® on the gut microbiota was dose dependent. In contrast, both inulin and xanthan increased interpersonal differences.
- All three test compounds significantly increased the production of short chain fatty acids (acetate, propionate and butyrate) that play an important role in host-microbiome "cross talk" and that modulate many human bodily functions, including the immune system. However, Benicaros® led to higher and more inter-individual consistent levels of SCFA than the other fibres.
- Benicaros® also demonstrated notably lower gas production than the other two fibres in the study

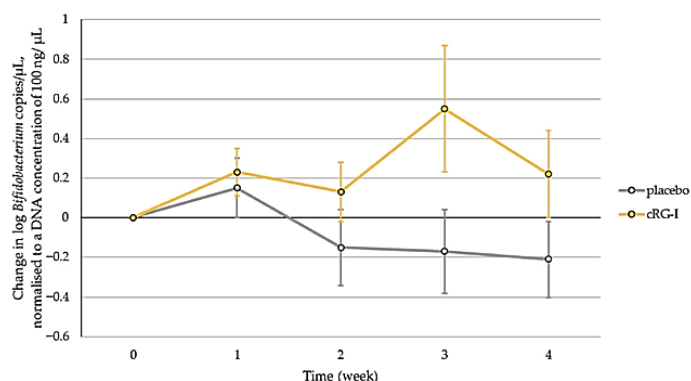
A study⁵ examined how Benicaros® affects the gut microbiota of 24 adults using a laboratory simulator that mimics the human gut. Participants received either 300 mg or 1500 mg per day, and changes were observed over 24–48 hours. Results showed that Benicaros® boosted the production of beneficial compounds such as indole-3-propionic acid (IPA), which supports overall health. The study also concluded that Bifidobacterium longum played a key role in creating this compound. In addition to short-chain fatty acids (SCFAs), Benicaros® also influenced other health-related metabolites and appeared to reduce harmful ones, with these positive effects seen consistently across all samples⁵.



A new randomized, double-blind, placebo-controlled clinical trial⁶ published recently (2025) evaluated the effects of Benicaros[®] after 4-weeks' supplementation in healthy adults. The study assessed gut microbiota composition, metabolic activity, immune cell activation, and gut health outcomes using validated questionnaires. Results showed a **rapid prebiotic effect**, with significant increases in Bifidobacteria (good bacteria associated with health) that peaked at week 3.

Data also supported earlier findings related to innate immune training by priming dendritic cells (the body's immune "scouts" that help detect and respond to threats). In addition to this, Benicaros[®] **improved gut microbiota balance** even in participants already consuming fibre-rich diets, and also **improved stool consistency**. Benicaros[®] was well tolerated by participants to the study⁶.

Fig. 4
Benicaros[®] Supports Bifidobacteria Increase
(Evangelia N. Kerezoudi et al. 2025)



Findings from these studies show that this unique precision prebiotic robustly stimulated growth of common beneficial gut bacteria, significantly increased metabolite production and creates a more consistent gut microbiota composition among healthy subjects, **highlighting its role in protecting the gut barrier**.

Benicaros[®] and GLP-1 Support for Weight Management

Benicaros[®], as a precision prebiotic fibre, may offer benefits in supporting GLP-1 analogue therapy for obesity by aiding gastrointestinal health⁷. Research demonstrated that, through its selective modulation of gut microbiota, Benicaros[®] **boosts the production of short-chain fatty acids (SCFAs)**, such as acetate and propionate^{1,4}, which are known to be implicated in the regulation of several metabolic processes, including insulin secretion, lipolysis, and the production of leptin and glucagon-like peptide-1 (GLP-1)⁷.

SCFAs are also known to **reinforce the intestinal barrier and reduce inflammation** and diarrhoea risk. Notably, Benicaros[®]'s unique profile results in lower gas production compared to other prebiotics^{1,4}, which may **improve tolerability** for patients undergoing GLP-1 RA (receptor agonists) therapy.

Furthermore, Benicaros[®] consistently **promotes beneficial bacterial** genera linked to metabolic health, including Bifidobacterium and Faecalibacterium, and **increases levels of indole-3-propionic acid (IPA)**^{6,8}, an antioxidant associated with systemic and neuroprotective benefits. These effects suggest that Benicaros[®] **may offer multi-faceted gastrointestinal support and help stabilize the microbiome during GLP-1RA treatment**, at low dosages.

Manufacturing Process

The concept of **upcycling is the basis of the Benicaros[®] production process**. The carrot pomace is obtained as a by-product from EU carrot juice production. Every batch of carrot pomace used for Benicaros[®] comes from selected local farmers and maintains exceptional quality thanks to precise processing technologies, strict food safety controls and experience in the raw material processing.

The carrot pomace is processed using a proprietary natural extraction process to obtain the Benicaros[®] cRG-I fibre. The fibre is then concentrated and dried into a water soluble powder.

Product Safety

The **European Food Safety Authority (EFSA)** published a positive opinion (2025) confirming that Benicaros[®] SF Pure P is safe for human consumption. More recently (2nd of July 2026), Benicaros[®] SF Pure P, was included in the EFSA Novel Food list (EU Regulation 2026/1306).

Toxicity studies⁹ have demonstrated that Benicaros[®] is **safe** in all published human clinical trials, and no adverse effects have been reported.

Furthermore, Ingredient's approved production locations are **FSSC22000 certified**. This certification assures that ingredients meet the most rigorous quality and safety standards.

Product Range

Ingredient	Active Content	Grade	Mesh Size
Benicaros [®] SF P	20-30% cRG-I content	Powder	< 2000 microns
Benicaros [®] SF Pure P	≥ 70% cRG-I content	Powder	< 2000 microns

Product Pack Size

Benicaros[®] SF P and Benicaros[®] SF Pure P are offered in 10Kg bags.

Product Applications

Benicaros[®] can easily be incorporated and combined with micronutrients into a variety of dietary supplements in different formats such as gummies, capsules, tablets, sachets and cubes. It can also be easily formulated into varying functional foods and beverages such as snacks, sports drinks, health shots, cereals and nutritional bars.



Product Dosage

- The recommended daily intake for **Benicaros® SF P (Powder)** is 850mg per day. This recommended daily intake is based on the content of the active component (cRG-I) in this product and assures an intake of cRG-I that is equivalent to the effective dose used in our clinical studies²
- The recommended daily intake for **Benicaros® SF Pure P (Powder)** is 300mg per day till a maximum of 1500mg per day for individuals over 3 years' old.

About



Ingredion is a leading global ingredients solutions company. They specialise in sweeteners, starches, nutrition ingredients and biomaterials that are used by customers in everyday products from foods and beverages to paper and pharmaceuticals.

References

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