

Fiber, the *Original Gut Health Ingredient*

Proactively Health-Conscious

Gut health is in the spotlight as consumers take control of their own wellness.

A growing market of U.S. consumers make *optimal health their personal priority.*

In recent years, the cost of health care¹ rose at rates that outpaced inflation, with a staggering 10.3% average increase in 2020. It's no surprise then that many are taking it upon themselves to find ways to live healthier (and less costly) lives.

¹ American Medical Association, "Trends in health care spending," March 20, 2023.





Fiber Takes Center Stage as Gut Health Grows in Popularity

In a 2021 Nielsen study, almost half of consumers surveyed said they regularly make proactive choices¹ about health and wellness. These consumers, whom are neither passive nor reactive about their personal health, said they are motivated by desires for longevity, disease prevention, and looking and feeling healthier.

Correspondingly, gut health is gaining traction in the U.S. and Western markets. As noted by Euromonitor International, gut health is “gaining popularity among consumers who pursue a holistic approach to healthy living” with rising interest in supporting a healthy gut microbiome with ingredients such as probiotics and fiber.

As attitudes about gut health grow and evolve, daily fiber intake is more and more on the mind of the health-conscious shopper. According to the 2021 Innova Health & Nutrition Survey, about one-third of consumers worldwide said they are increasing the amount of fiber they take in on a regular basis. The beneficial relationship between dietary fiber and gut health presents an alluring opportunity for brands that are looking to reach health-conscious consumers. Increasingly, fiber is seen as having benefits beyond laxation and regularity. In addition to helping maintain healthy cholesterol and blood sugar levels, fiber intake promotes growth of healthy gut bacteria.²



Three-out-of-four (77%) health-conscious consumers believe gut health is an important benefit.³

¹ NielsenIQ, An inside look into the 2021 Global Consumer Health and Wellness Revolution, 2021.

² Gustafson CR, Rose DJ. US Consumer Identification of the Health Benefits of Dietary Fiber and Consideration of Fiber When Making Food Choices. *Nutrients*. 2022

³ AYTM Online Survey; n=800 US Adults 18+ Census Representative.

Closing the Fiber Intake Gap

Consumers connect fiber and gut health but still do not get enough. Brands must innovate to close the fiber intake gap.

According to a 2022 study¹ in the journal *Nutrients*, more than half of U.S. consumers perceive “supporting healthy gut bacteria” as a benefit of fiber. The authors point out that as consumers perceive more benefits in fiber, they are much more likely to seek it out. In fact, the study found that, compared to those who perceive no benefits in fiber, those who recognized benefits of dietary fiber were up to 14 times more likely to “consider the fiber content of foods when making food choices.”

Considering the changing attitudes toward personal health, the findings support the hypothesis that consumers’ awareness and perceptions of dietary fiber can be powerful drivers of purchase decisions. Nevertheless, the vast gap between actual and recommended fiber intake is cause for serious concern among U.S. consumers.

 In fact, 95% of Americans do not meet the daily fiber recommendations.

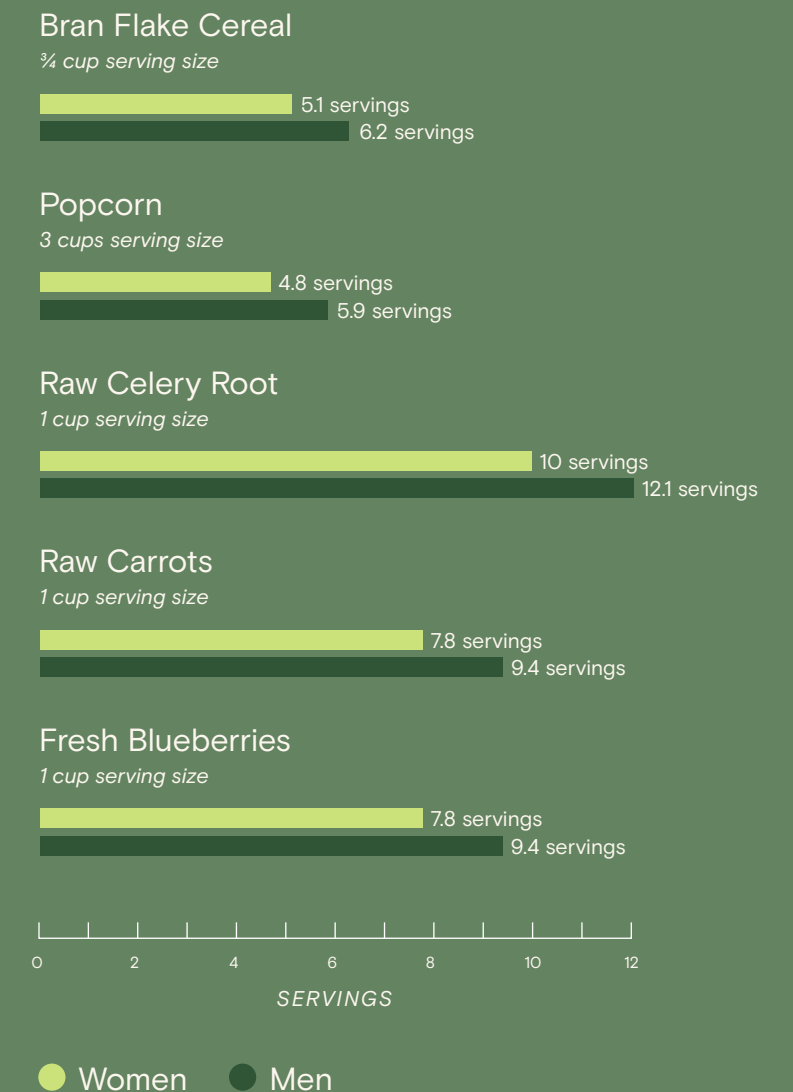
Studies show that the amount of fiber in the average American’s daily diet is significantly lower² than levels recommended by the Institute of Medicine. Brands can help to close the gap through innovation in fiber-enriched and fiber-forward food and beverage applications that appeal directly to gut health consumer.

¹ Gustafson CR, Rose DJ. US Consumer Identification of the Health Benefits of Dietary Fiber and Consideration of Fiber When Making Food Choices. *Nutrients*. 2022 Jun 3;14(11):2341.

² Quagliani D, Felt-Gunderson P. Closing America’s Fiber Intake Gap: Communication Strategies From a Food and Fiber Summit. *Am J Lifestyle Med*. 2016 Jul 7;11(1):80-85.

Pass the Fiber!

Many Servings Needed to Meet Fiber Intake Recommendations



*Assuming 2,000 calorie diet for women and 2,400 calorie diet for men, ages 19-30
Source: Dietary Guidelines for Americans 2020-2025 (USDA/HHS)

Formulating with Fiber

Insoluble and soluble fibers play different but crucial roles in gut health.

When it comes to fiber-enriched applications, formulators have two options: soluble or insoluble fiber. Both types of fiber will serve different needs and have different sensory effects and should not be considered interchangeable. For example, many soluble fibers have water-holding and gelling effects on formulations, which changes texture and taste. In certain applications, such as doughs and batters for baked or extruded goods like bars, insoluble fibers may offer better resistance to drying and oil emulsion stability.

Both soluble and insoluble fibers are essential to a holistic approach to gut health. Certain soluble fibers contribute to prebiotic (fermentable) content in the diet and are well-suited for many types of gut-focused applications. Nonfermentable insoluble fibers, on the other hand, help promote digestive regularity, tend not to create bloating and can be useful for increasing

the fiber content in prebiotic products, as well as a standalone ingredient in a wide range of other applications.

The market opportunity is significant. If U.S. consumers closed the fiber gap and met daily average recommended intake levels, the total market for foods fortified with more than 6 grams of fiber could grow to more than \$12 billion annually.¹

Fortunately, there are many fiber ingredients available to brands. When formulating for gut health consumers, formulators must decide which ingredient will deliver the desired fiber dosage and provide a pleasing sensory experience to which consumers will want to return. Additionally, one of the latest fiber ingredients to come to market has potential to be uniquely appealing to gut health consumers.

¹ Total US MULO Channel (powered by IRI) & Total US – Natural Channel, TPL Universe, L52 Weeks Ending 01/01/2023 Grocery, Frozen, Refrigerated departments – UPC level, NFP Ranges – Fiber Value >6g





Introducing Brightseed Bio 01™ Hemp Fiber

A fiber from upcycled hemp hulls naturally elevates gut health benefits in functional foods and beverages.

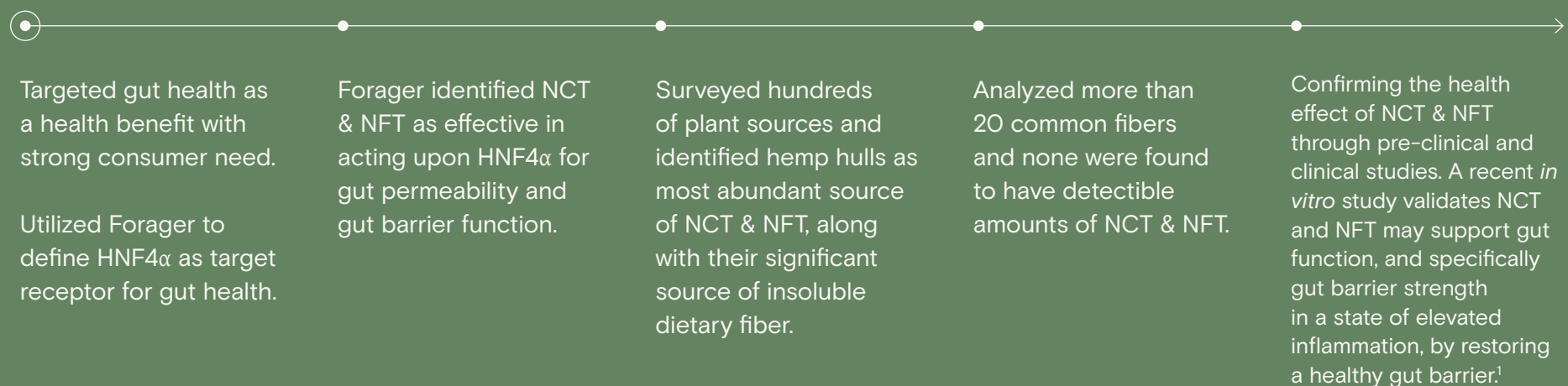
Brightseed Bio 01™ is a new insoluble fiber made from upcycled hemp hulls that offers formulators a novel solution for adding fiber to gut health applications. Naturally sourced and processed without chemicals, Bio 01™ is a 100% plant-based, clean label fiber ingredient that easily integrates into a wide range of applications and readily complements brands oriented toward sustainability and whole food ingredients.

Bio 01™ is the only fiber ingredient to contain both NCT (N-trans-Caffeoyltyramine) and NFT (N-trans-Feruloyltyramine). Recently published preclinical data show that NCT and NFT can help maintain a healthy gut and support gut barrier function.¹

Bio 01™ is made using a proprietary and gentle process that maintains the fiber and bioactive content in the hemp hulls. Bioactives are naturally occurring compounds that signal beneficial biological responses in cells and tissues.

¹ Bolster, D., Chae, L., van Klinken, J.-W., and Kalgaonkar, S. (2022). Impact of selected novel plant bioactives on improvement of impaired gut barrier function using human primary cell intestinal epithelium. *J. Food Bioact.* 20: 11-16.

Brightseed Bio 01™ Discovery Process



Versatile Fiber for the Next Frontier of Gut Health Formulation

Brightseed Bio O1™ insoluble hemp hull fiber easily integrates into a wide range of applications and can help brands break through to gut health consumers. The novel fiber ingredient has excellent stability, resists gelling, and does not contribute to aromas or off-flavors.



Baked Goods



Cereal, Granola & Nutrition Bars



Extruded Snacks



Functional Beverages & Smoothies



Cereal & Granola



Brightseed Bio O1™ could be the key to illuminating the new frontier of gut health and engaging with tomorrow's consumer. To learn more, contact us directly.

References:

1. American Medical Association, Trends in health care spending, March 20, 2023.
2. Nielsen, An inside look into the 2021 Global Consumer Health and Wellness Revolution, 2021.
3. 2021 Innova Health & Nutrition Survey
4. Stewart, Kalgaonkar, van Klinken, et al. White Paper: Brightseed Bio O1, A Whole Food Ingredient from Hemp Hulls delivering dietary fiber and bioactives
5. Gustafson CR, Rose DJ. US Consumer Identification of the Health Benefits of Dietary Fiber and Consideration of Fiber When Making Food Choices. *Nutrients*. 2022 Jun 3;14(11):2341.
6. Quagliani D, Felt-Gunderson P. Closing America's Fiber Intake Gap: Communication Strategies From a Food and Fiber Summit. *Am J Lifestyle Med*. 2016 Jul 7;11(1):80-85.
7. Bolster, D., Chae, L., van Klinken, J.-W., and Kalgaonkar, S. (2022). Impact of selected novel plant bioactives on improvement of impaired gut barrier function using human primary cell intestinal epithelium. *J. Food Bioact*. 20: 11-16.
8. Total US MULO Channel (powered by IRI) & Total US - Natural Channel, TPL Universe, L52 Weeks Ending 01/01/2023 Grocery, Frozen, Refrigerated departments - UPC level, NFP Ranges - Fiber Value >6g