Prebiotic Carbohydrate Ingredients for Supplements, Food, and Beverage Applications (2022-033)

Novel process to produce low caloric carbohydrates prebiotic ingredients for better human health.

Market Overview

The United States and global obesity and diabetic epidemics are uncontrollable due to high caloric food consumption. Low digestible carbohydrates are an emerging class of foods and have been shown to be essential for maintaining blood sugar levels, digestive system-colon health, preventing certain cancers, and promoting health-promoting bacteria in the lower intestine. Hence, there is a need for isolating, producing, and enriching prebiotic carbohydrate ingredients. This novel technology enables producing low digestible carbohydrates for better human health (i.e., low caloric and glycemic properties), while still maintaining superior sensory and functional properties of food. Furthermore, the carbohydrate ingredients and their blends produced through this process are notably organic, non-allergenic, non-gluten, and non-GMO. These properties will have a positive impact on the marketability of the carbohydrate ingredients that is not available with wheat, corn, or other allergenic carbohydrates.

Technical Summary

The novel technology consists of unique carbohydrate ingredients and blends that reduce glycemic index and digestibility. To isolate and enrich different prebiotic carbohydrate ingredients from pulse crops (legumes), four key processes have been developed. These four processes include the following:

1. Water-soluble carbohydrate extraction
2. Isolation of resistant starch and cellulose-rich prebiotic carbohydrates
3. Isolation of non-digestible starch-free prebiotic polysaccharides
4. Process to produce prebiotic oligosaccharides

The inventors have demonstrated proof of concept from each process. The resulting carbohydrate ingredient blends have the potential to be applied to a wide variety of products and increase consumer choices for healthy food products.

Application

Supplements, low caloric foods and beverages, sugar free sweeteners

Development Stage

TRL 3/4

Advantages

- Reduce glycemic index.
- Improve gut health including colon.
- Organic, non-allergenic, non-gluten, and non-GMO properties.
- Supplements or foods to improve gut health.
- Applicable to a wide range of food and beverage products.

App Type	Country	Serial No.	CURF Ref. No.	Inventors
Utility	United States	18/424,285	2022-033	Dr. Dil Thavarajah

About the Inventors

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Dr. Dil Thavarajah is a Professor in the Department of Plant and Environmental Sciences and co-leader of the Phenomics component of the Feed the Future Innovation Lab for Crop Improvement at Cornell University. Dil is internationally recognized as a leader in pulse biofortification. Her research focuses on developing rapid and inexpensive analytical chemistry tools and finding whole-food-based-solutions to combat global "hidden hunger."

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