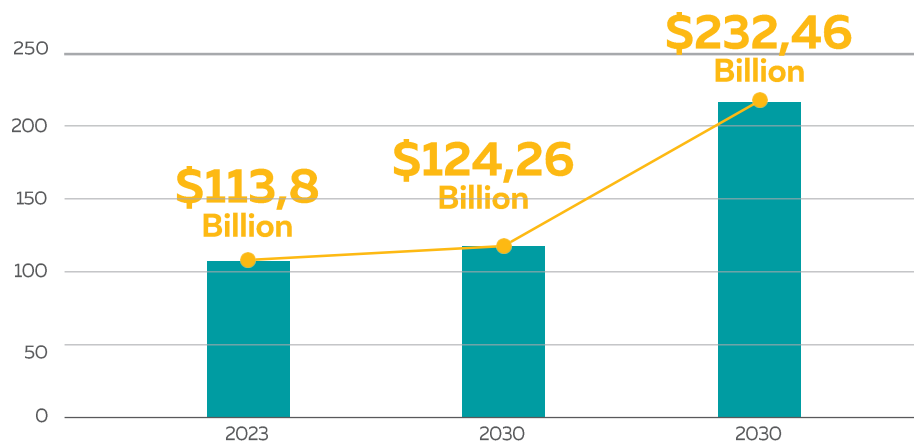


**INGREDIENTS - PREBIOTICS
FROM JERUSALEM ARTICHOKE
FOR THE FOOD AND ANIMAL FEED INDUSTRY**

GLOBAL HEALTH&WELLNESS FOOD MARKET

Market forecast to grow at a CAGR of 9,3%



The market is studied under the categories of



Artificial Color-Free



Dairy-Free



Lactose-Free



Soy-Free



Artificial Flavor-Free



Gluten-Free



Nut-Free

PREREQUISITES FOR THE GROWTH OF THE FOODTECH MARKET:

- Food availability. Lack of opportunity to feed the growing population of the Earth by traditional means.
- Environmental problems. Destructive impact of traditional agricultural production on the environment.
- Human Health. Production uses chemicals that have little to do with health such as pesticides, antibiotics, chemicals and growth hormones. For these reasons, there are health problems due to poor nutrition.
- One of the key growth drivers for the market is the increasing consumption of nutrient-rich foods to improve overall health

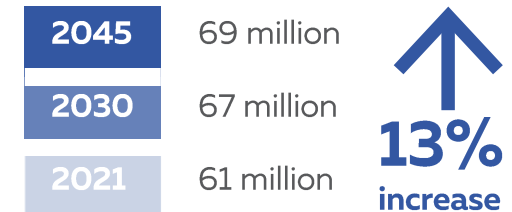
NUMBER OF PEOPLE WITH DIABETES

Aged 20–79 years globally and by IDF region

North America & Caribbean (NAC)



Europe (EUR)



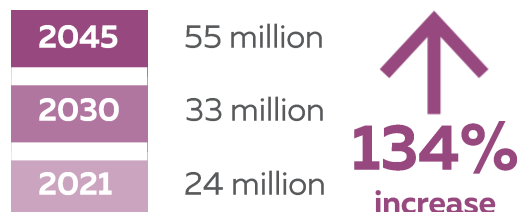
South & Central America (SACA)



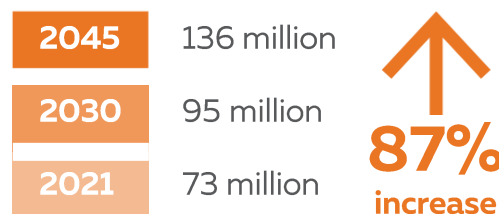
South-East Asia (SEA)



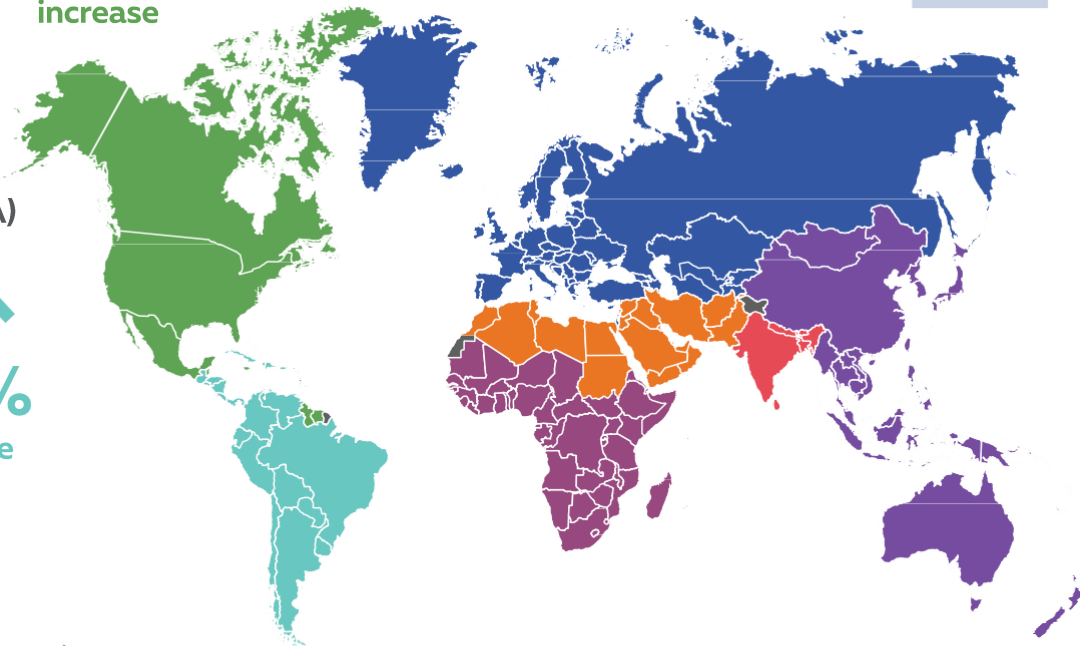
Africa (AFR)



Middle East & North Africa (MENA)



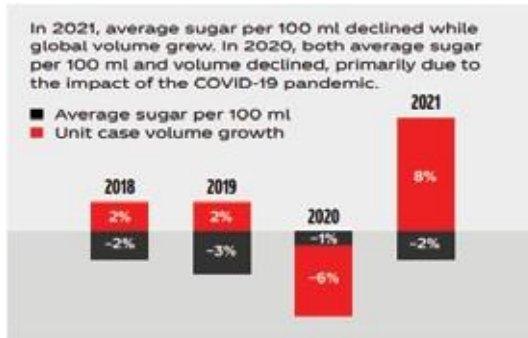
Western Pacific (WP)



PREBIOTICS MARKET: GROWTH DRIVERS



REDUCED SUGAR CONSUMPTION



28%
of our volume sold in 2021 was low- or no-calorie

COCA-COLA ZERO SUGAR
grew by double digits in 108 countries and territories in 2021



GASTROINTESTINAL DISEASE PRODUCT MARKET GROWTH



"About 11% of the U.S. population suffers from chronic gastrointestinal disease with a prevalence rate of about 35% in the 65+ population, creating opportunities to include prebiotics in the daily diet of the U.S. population."

"with 22% of Americans familiar with and actively trying to consume prebiotics followed by 13% for postbiotics (International Food Information Council, 2022)"

DEMAND FOR FUNCTIONAL AND PERSONALIZED NUTRITION

BENE0 announces additional investment in chicory inulin production



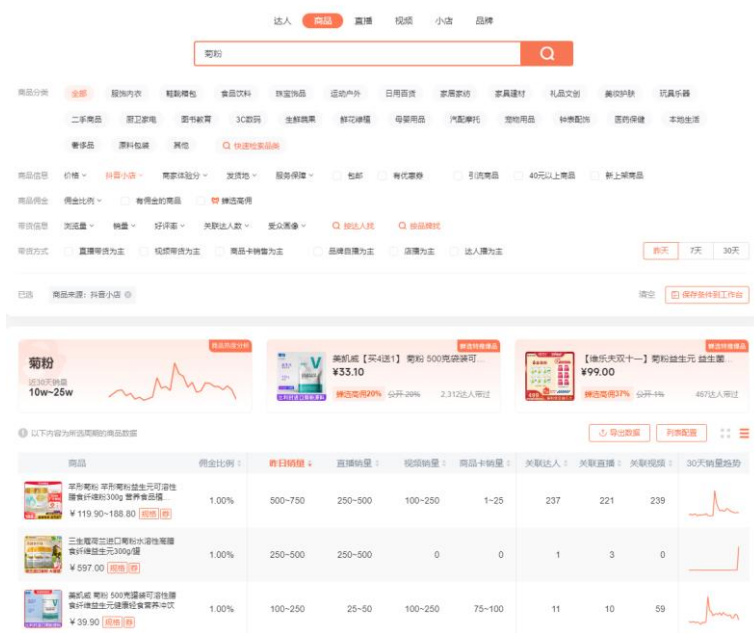
Multi-million investment in capacity extension for chicory root fibre.

BENE0 announces multi-million investment program in capacity extension for prebiotic chicory root fibre worldwide. BENE0, one of the leading manufacturers of functional ingredients, has announced a multi-million investment program for the coming years to expand capacity for its prebiotic chicory root fibre production sites in Pemuco, Chile and Oreye, Belgium. The first step will see more than €30 million invested. The entire program will ensure a significant capacity increase of more than 40 percent of BENE0's global chicory root fibre production to meet rising customer demand and drive further growth within the market. The work on both production sites is beginning in 2022.

LIST OF MEMBERS OF THE INTERNATIONAL ASSOCIATION OF PREBIOTICS AND PROBIOTICS - ISAPP



PREBIOTICS MARKET IN CHINA

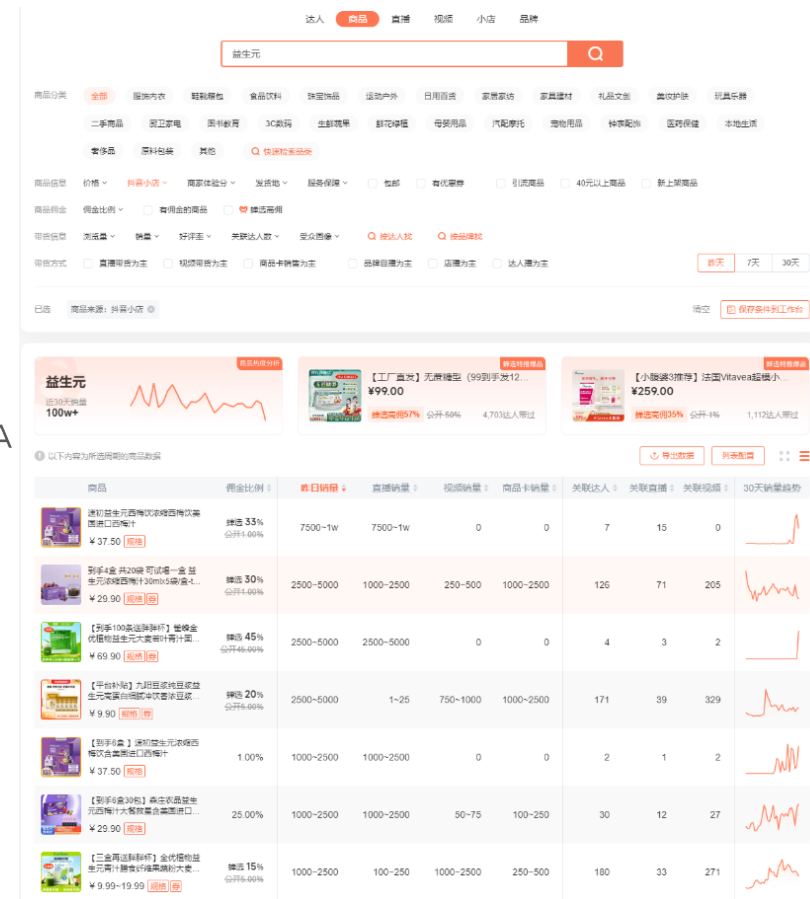


KEY FIGURES

- Inulin 2022 Market size – 10K tons
- Inulin 2023(F) Market size – 12 K tons
- Growth – 12% annually
- Price – \$5 / kg

OPPORTUNITIES IN CHINA:

- 50% of inulin is imported from Europe;
- Only one large player serves local market (Vilof – 6K tons per year of JA inulin). Other JA inulin factories (3-4 smaller factories – 1K tons each) serve US market (need for organic inulin is higher);
- Main stopper for local production increase – cost of organic raw materials (3-5 times higher than in Russia);
- B2B market opportunities: Jerusalem Artichoke processing season is only 3-4 months, raw material storage is expensive – supplying of dry JA from Russia will extend the processing season;
- B2C market opportunities: Growing demand for organic fiber in the B2C market (only TikTok turnover in prebiotics is 100M RMB per month).



INULIN PRODUCTION IN THE WORLD



- Requires no fertilizer or crop protection products when growing
- Neutral carbon footprint
- High yield
- Winter storage in the ground

- A long tradition of cultivation



- No opportunities for organic farming
- Tastes bitter

- A long tradition of cultivation



- Small volumes (mostly used in the alcohol industry)
- Harvest no more than once every 5-7 years



ESTABLISHED AGRICULTURAL PRODUCTION OF RAW MATERIALS JERUSALEM ARTICHOKE



2000

HECTARES

Own land fund

**ORGANIC
CERTIFICATION**

Obtained in 2023

YIELDS

25-35

TONS / HA

Tubers

40-60

TONS / HA

Green mass



- Possibility to use green mass.
- Cultivation is possible both in Crop rotation as well as in monoculture.

WE FOLLOW THE BASIC PRINCIPLES OF ESG

- 100% zero waste production
- Low carbon footprint
- Carbon farming development



PRODUCTION



ISO 22000:2018

CERTIFICATE

Certificate registration number:
2208ISO2222121431

UP TO **10,000**
TONS PER YEAR

Finished product output

UP TO **500** TONS/DAY

Capacity of raw material processing

DE SMET

ENGINEERING

Belgium

OPERATING PLANT

LIPETSK REGION

Launched in December 2021



Ingredients: Jerusalem artichoke (JA)

Appearance – chips, cubes or slices

Packaging: 200 kg big-bag

Shelf life: 12 months



DRIED SHAPED SLICED JERUSALEM ARTICHOKE

HS Code – 0714909000

The product is intended for use in ready-to-eat food products and for general sale. It is made from fresh Jerusalem artichoke tubers by cutting and drying them.

Dry matter content, %, NLT 90%

Inulin content (fructooligosaccharides, inulooligosaccharides (PD, 2-25) on the dried basis, 55-70%

Pectin content: up to 9 %

Total content of carbohydrate on the dried basis, %, NMT:

- Glucose 2%
- Fructose 5%
- Sucrose 12%

Ingredients: Jerusalem artichoke (JA)

Appearance – powder
(particle size from 50 to 500 μm)

Packaging: 30kg/50kg bags
with PE lining

Shelf life: 12 months



JERUSALEM ARTICHOKE DIETARY FIBER

HS Code – 110620900

The product is intended for use in ready-to-eat food products and for general sale. It is made from fresh Jerusalem artichoke tubers by drying and, subsequently, grinding them.

Dry matter content, %, NLT 90%

Inulin content (fructooligosaccharides, inulooligosaccharides (PD, 2-25)
on the dried basis, 55-70%

Pectin content: up to 9 %

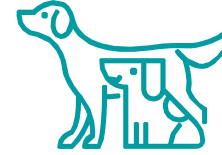
Total content of carbohydrate on the dried basis, %, NMT:

- Glucose 2%
- Fructose 5%
- Sucrose 12%

APPLICATIONS IN THE FOOD INDUSTRY



- Sugar-free dietary and diabetic products;
- Healthy sweets and breakfast cereals, groceries, breads, and bran;
- Baby food and superfoods;
- Artisan breads;
- Processed meats and plant-based meats;
- Dietary supplements.



Pet food and specialty rations.



Full-fat mixed feed for farm animals.

TECHNOLOGICAL ADVANTAGES:



Possesses moisture-retaining properties of inulin and pectin, which allow for longer preservation of freshness and moisture in finished food products.



Can serve as a flavor and health food additive, as well as a base for the production of functional food products, including soups, main courses, bread, etc.



Contains inulin and pectin - prebiotics that enrich food products with dietary fiber.



Addresses the issue of reducing added sugar in food products by enabling the production of "sugar-free" products.

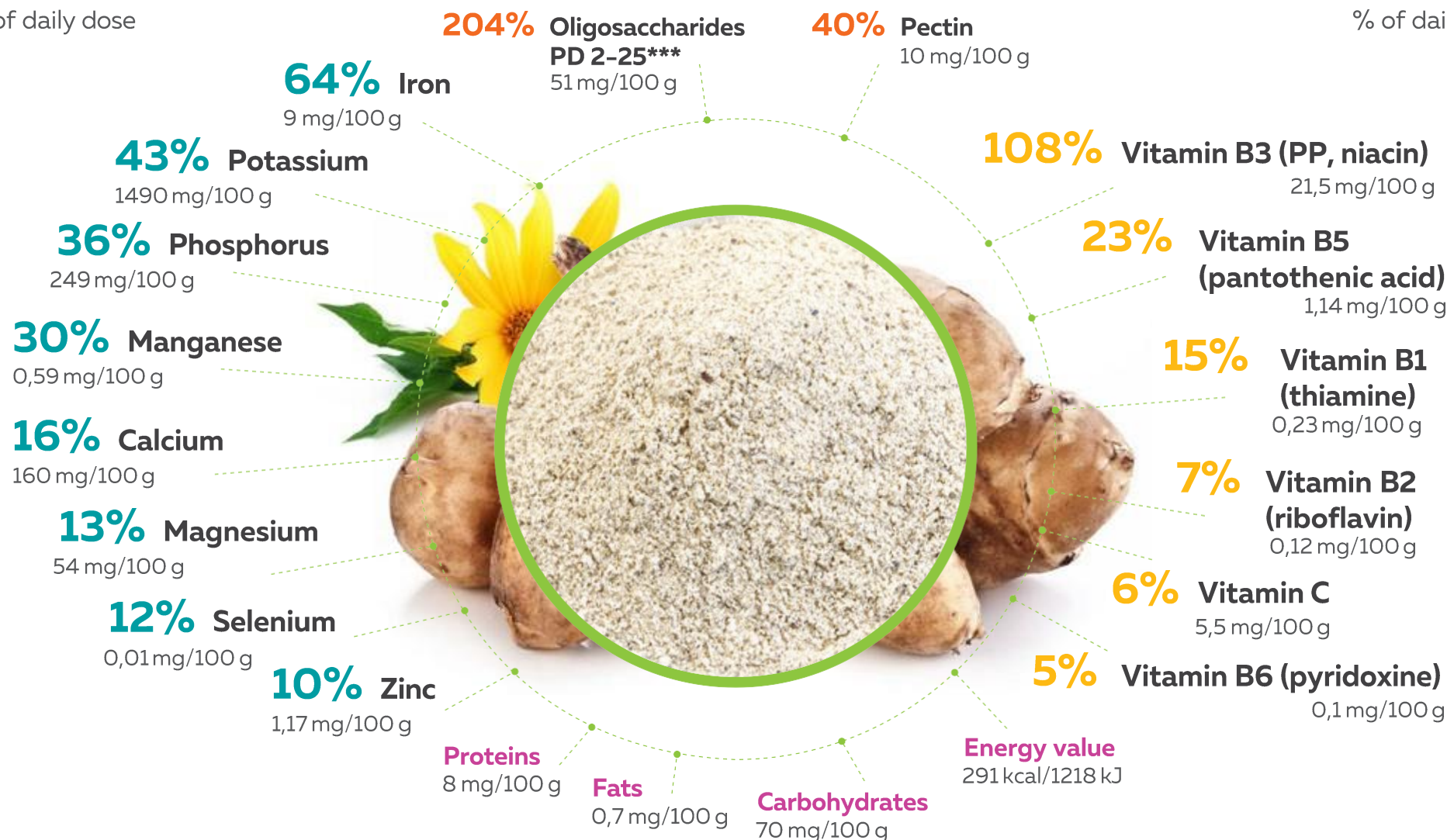
THE CONTENT OF VITAMINS AND BENEFICIAL NUTRIENTS IN JERUSALEM ARTICHOKE DIETARY FIBER

MINERALS

% of daily dose

VITAMINS

% of daily dose



*Test report of FRC Biotechnology RAS

**data from research protocol No. 28459-23 dated 06/16/2023 LLC "IL Test-Pushchino«

***According to the recommendations of MP 2.3.1.0253-21 "Norms of physiological needs for energy and nutrients for various groups of the population of the Russian Federation" (approved by the Federal Service for Supervision of Consumer Rights Protection and Human Welfare on July 22, 2021)

BENEFITS OF USING JERUSALEM ARTICHOKE DIETARY FIBER

PREBIOTIC

Artichokes are rich in dietary fiber, which facilitates digestion and promotes intestinal health. They contain inulin, a prebiotic fiber that promotes the growth of beneficial bacteria in the gut. High levels of potassium, iron and B vitamins increase the overall nutritional value of the product.

PREREQUISITES FOR THE GROWTH OF THE FOODTECH MARKET

Jerusalem artichoke dietary fiber is gluten-free, making it a great alternative for people with gluten intolerance or celiac disease. It is also free of common allergens such as wheat, soy, and nuts, which helps expand the availability of the product.

SUGAR-FREE

Jerusalem artichoke dietary fiber imparts a subtle sweet-nutty flavor to baked goods and other food products. It enhances texture by giving a moist and tender consistency, especially in gluten-free recipes.





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#NoAddedSugar