

THE WORLD GALACTO - OLIGOSACCHARIDE INGREDIENTS MARKET

Science Market Regulation

UBIC
CONSULTING
2017



Marketing Development

Strategy Consulting

Partnership searches

Informations systems

Technical & Competitive Scanning – Regulations – Manufacturers

This comprehensive report is based on in-depth interviews with food companies completed by a desk review. It provides for DECISION MAKERS a global understanding of the sector as well as an outlook on its future.

MARKET ANALYSIS

Trends & Outlook
Usage of ingredients:
volumes and value
Manufacturers profiles
Users opinion
Regulation



FOOD SEGMENTS

Food industry
Functional food
Food supplements



COUNTRIES COVERED

North America
Western Europe
Asia
Australia-New Zealand



INGREDIENTS COVERED

GOS (Galacto-oligosaccharides)
Other oligosaccharides



THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

OBJECTIVES

MARKET

Food consumption trends and expectations

Consumer market trends by food segments

Prospective

MANUFACTURERS

Food industry orientations

Applications in food segments

Consumption

RESEARCH

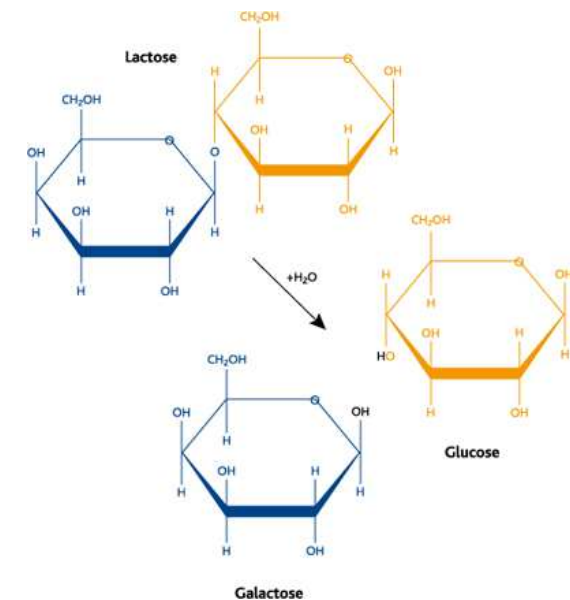
New researches and new developments

INTRODUCTION

Consumer demand for functional foods has known a remarkable increase in the past few years. As the functional food market continues to expand in size with an average rate of 6.5% per year between 2007 and 2011, prebiotics have been introduced as an effective ingredient used in this regard. These are non-digestible carbohydrates which are selectively fermented in the gut by specific bacterial groups which convey health benefits.

Oligosaccharides are the largest and commercially the most important prebiotic category in the world. They play a major role as functional ingredients compared to dietary fibers, sugar alcohols, peptides, probiotics, polyunsaturated fatty acids and antioxidants.

GOS are natural constituents in human milk as well as various types of common foods including onions, garlic, banana, soybeans, and chicory. However, the levels of GOS in these foods are too low to exert any significant effect. For this reason, the best delivery system may be through dietary



THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

OBJECTIVES

MARKET

Food consumption trends and expectations

Consumer market trends by food segments

Prospective

MANUFACTURERS

Food industry orientations

Applications in food segments

Consumption

RESEARCH

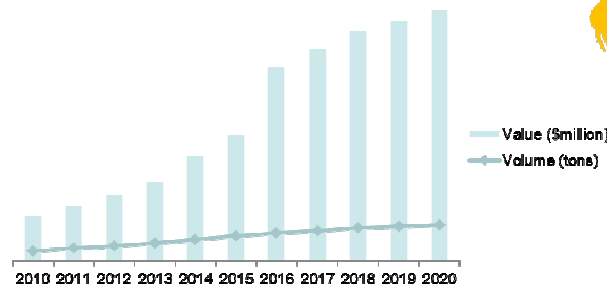
New researches and new developments

MARKET OVERVIEW

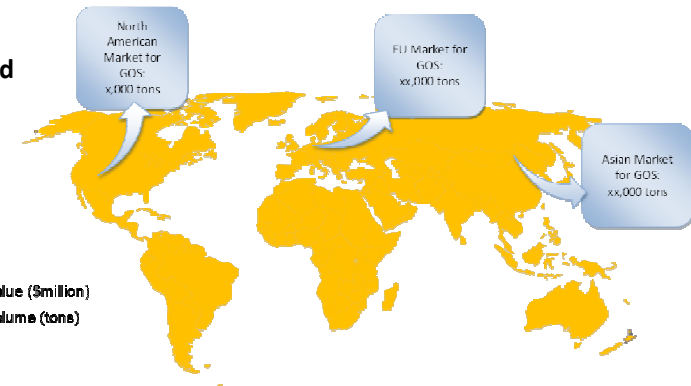
The global market size of GOS can be estimated at xx,000 in 2016 tons and is expected to reach xxx,000 mtons in 2020 with a CAGR of x% from 2016 to 2020. In terms of revenue, the global market reached **USD xxx million in 2016** and is predicted to increase significantly over the next five years, in line with the rapid growth of the consumption of functional food and the increases of the price to reach approx. **USD xxx million by 2020**. The Asian market is the dominant market and can be estimated at \$xxx million. Europe is the second largest consumer of GOS with \$xxx million .

Asia Pacific is the most dynamic region for GOS and is the fastest growing market for oligosaccharides. In term of volume the Asian Market was estimated at xx,000 mtons in 2016. Currently, China is the major market for oligosaccharides, and specifically GOS (market share xx%). India is expected to be a promising market and to have a significant impact on the GOS market in the region driving by the growing infant formula demand.

Global GOS market volume ('1000 tons) and value (\$million) forecast 2010 - 2020



Global GOS market volume ('1000 tons) by region



THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

OBJECTIVES

MARKET

Food consumption trends and expectations

Consumer market trends by food segments

Prospective

MANUFACTURERS

Food industry orientations

Applications in food segments

Consumption

RESEARCH

New researches and new developments

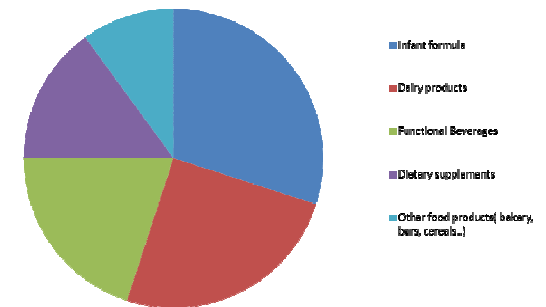
MARKET APPLICATION

In general GOS can be applied to the following areas:

- Addition to processed foods, including beverages, frozen foods, snacks such as cookies and chips.
- Use as dietary supplement.
- Inclusion to infant formulas, to make them more closely resembles mother's breast milk.
- Addition to animal feeds.
- Low calorie sweetener. This is especially useful for diabetics and obese patients, since there sugars are not digested but taste and sweetness are not sacrificed.
- New drug development, including cell adhesion or transplantation based drugs.
- Other non-food applications including cosmetics use and for mouthwashes.

The market is mainly driven by the increase of the consumption of infant formula, one of the main applications in Asia and Europe for GOS. Functional dairy products and beverages are the second major application areas for GOS followed by dietary supplements and cereals.

World GOS market application by segment



Uses of GOS in physico-chemical modification of foodstuff

- Low sweetness (low glycemic index, low calorie foods)
- Taste and transparency
- Prevention of hygroscopicity
- Prevention of coloration
- Reinforcement agent and thickener
- Glazing agent (e.g., rice crackers, hard lollies/boilings)
- Regulation of freezing point
- Humectants (e.g., cakes, pastries)
- Powderizing material (e.g., coffee whitener, soups)

THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

TABLE OF CONTENTS

OBJECTIVES OF THE STUDY

RESEARCH METHODOLOGY

MARKET SIZE

MARKET EVALUATION

MARKET EXPECTATIONS

INTERVIEWS OF INDUSTRIAL USERS

1. EXECUTIVE SUMMARY

2. INTRODUCTION

PREBIOTICS PRESENTATION

PREBIOTICS CLASSIFICATION

INGREDIENTS PROPERTIES

Prebiotic properties

Non-prebiotic benefits of prebiotics

Immunomodulation

GALACTO-OLIGOSACCHARIDES PRESENTATION

LACTOSE

Generalities

Lactose - a potential prebiotic

GOS (GALACTO OLIGO SACCHARIDE)

Generalities

Characteristics

GOS production

Properties

Health properties of GOS

GOS applications

Scientific research made on GOS in Infant Formula

Summary of Studies of GOS in Infants

3. MARKET OVERVIEW

Market trends in prebiotics- Galacto-oligosaccharides

GOS application by market segment

INFANT FORMULA

TRADITIONAL FOOD PRODUCTS

ANIMAL FEEDS

Market restraints

New sources for GOS

Prices

Packaging

GOS limitations

Food and Nutritional products formulated with GOS

4. MARKET APPLICATIONS BY REGION

European Market

DAIRY PRODUCTS

INFANT FORMULA

DANONE NUTRICIA EARLY LIFE NUTRITION

HUMANA GmbH (DE)

ORDESA GROUP(ES)

FUNCTIONAL FOODS

DUPONT (DANISCO- DK)

BEVERAGES

OTHER FOOD SEGMENTS

Hipp GmbH & Co. Vertrieb KG (Gr)

FOOD SUPPLEMENT

COSMETICS

North & South American Market

US

Dairy products

Infant formula

MEAD JOHNSON (USA)

Functional foods

Beverages

Other food segments

Meal replacers / Meat

Bakery

Confectionery

Low fat/low sugar ice cream

Food supplements

SOUTH AMERICA

THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

TABLE OF CONTENTS

CHILE

Asian Market

JAPAN

Japanese lactose derivatives market size

Major oligosaccharides launched on the Japanese market

GOS is a FOSHU Prebiotics in Japan

Functional foods

SHOWA SANGYO CO LTD (JP)

SUNTORY HOLDINGS LTD (JP)

ENSUIKO SUGAR REFINING CO LTD (JP)

NIPPON BEET SUGAR MANUFACTURING CO LTD (JP)

Beverages

YAKULT HONSHA CO LTD (JP)

MORINAGA MILK INDUSTRY CO LTD (JP)

Oligosaccharides Supplier

NIHON SHOKUJIN KAKO CO LTD (JP)

NIPPON PAPPER INDUSTRIES CO LTD (JP)

B FOOD SCIENCE CO LTD (JP)

SOUTH KOREA

Confectionery

CHINA

Mengniu Dairy Company Limited (CN)

TAIWAN

Products on the market

INDONESIA

Confectionery

Oceania

FOOD SUPPLEMENTS

FUNCTIONAL FOODS

INFANT FORMULA

5. **GOS Manufacturers**

ROYAL FRIESLANDCAMPINA NV (NL)

CLASADO LTD(UK)

FIRST MILK LTD (UK)

Great Ocean Ingredients Pty Ltd. (AU)

KERRY INGREDIENTS / KERRY GROUP PLC (IRL)

INGREDION INCORP (US)

OLYGOSE (FR)

YAKULT PHARMACEUTICAL INDUSTRY CO LTD (JP)

NISSIN SUGAR MANUFACTURING CO LTD (JP)

SAMYANG GENEX CO (KR)

TAIWAN FRUCTOSE CO LTD (TW)

ABO SWITZERLAND CO LTD (CN)

BAOLINGBAO BIOLOGY, CO.LTD.

NEW FRANCISCO BIOTECHNOLOGY (CN)

QINDAO FTZ UNITED INTERNATIONAL INC (CN)

TERIO CO (CN)

VITALUS (CA)

WUXI CIMA SCIENCE CO LTD (CN)

6. REGULATION

GRAS status

Existing regulatory approvals for the use of GOS in foods

Custom duties for GOS

Europe

USA

Canada

7. GOS IMPORTS

Chinese Importations of GOS 2011/2012– list of users

Chinese Importations of GOS 2013- list of users

Import stats of galacto-oligosaccharide into USA

THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

LIST OF TABLES

- Table 1. Prebiotics classification
- Table 2 Sources of oligosaccharides
- Table 3: Bacterial sources of Glycoside hydrolases used for the production of GOS.
- Table 4 Commercially available sources of β -galactosidase
- Table 5: General physicochemical properties of GOS
- Table 6. Summary of in vitro Studies with GOS
- Table 14. Main GOS producers by Country
- Table 7. Market volume by country -2016 in mtons
- Table 8. Intended Uses of Galacto-oligosaccharides
- Table 9 . Theoretical GOS market in Infant Formula
- Table 11 GOS prices – 2014
- Table 11 GOS prices in the US market – 2016
- Table 12. Some GOS-Containing Products on the Market in Europe and Asia
- Table 13. Some Commercial GOS Products
- Table 15. Use of prebiotics in the European dairy industry
- Table 17 Use of GOS in the European infant formula market
- Table 18. Use of prebiotics in the European functional food industry
- Table 19. Use of prebiotics in the European beverage industry
- Table 20. Additional prebiotic containing foodstuffs launched in Europe that claim to improve gut health
- Table 21. Use of prebiotics in European food supplements – Europe
- Table 22. Use of prebiotics in the European cosmetic market
- Table 23. Use of prebiotics in the US dairy industry
- Table 24 GOS consumption in the US IMF industry
- Table 25. Use of prebiotics in the US IMF industry
- Table 26. Use of prebiotics in the US functional food industry
- Table 27. Use of prebiotics in the US beverage industry
- Table 28. Use of prebiotics in the US food supplement market
- Table 30. Use of prebiotics in the Asian infant formula market
- Table 31. Japanese functional food market by key functional claim
- Table 32. Oligosaccharides on the Japanese market (volume and value, 2013)
- Table 33. Sales of Prebiotics in Japan
- Table 35. Use of prebiotics in the Japanese functional food industry
- Table 36. Use of prebiotics in the Asian beverage industry
- Table 37. Prebiotic use in Infant Formula in Korea
- Table 39. Prebiotic use in Infant Formula in Indonesia
- Table 40. Use of prebiotics in the Oceanian food supplements
- Table 41. Use of prebiotics in the Oceanian functional food industry
- Table 42. Main suppliers of GOS and product range

LIST OF FIGURES

Figure 1. Prebiotic modulates the composition of the natural ecosystem by stimulating growth of indigenous micro-organisms

Figure 2. Prebiotic properties

Figure 3. Lactose structure

Figure 4. Structure of GOS

Figure 5. Production of GOS from lactose hydrolysis

Figure 6. Formation of GOS from Lactose by beta-Galactosidase

Figure 7. GOS production process

Figure 8. Stability of GOS and FOS in a Soft Drink Model

Figure 9. Immuno and Gastro-intestinal benefits of GOS

Figure 10. Number of new products containing GOS in 2012

Figure 11. Global GOS market volume ('1000 tons) and value (\$million) forecast 2010 - 2020

Figure 12. World GOS market by segment – 2016

Figure 13. Western Europe market share, 2016

Figure 14. Global and Chinese GOS market volume forecast, 2010 - 2020 (Tons)

Figure 15. Japanese functional food market share by type of product, 2014

Figure 16. Japanese functional food market by key functional claim

Figure 18. Market Scale of FUSHO in Japan (Billion)

Figure 19. Major oligosaccharides launched on the Japanese market

Figure 21. Percentage of the Products by Health Claim FOSHU (2012)

Figure 22. Additives used in Korea

THE WORLD GALACTO-OLIGOSACCHARIDE MARKET

ORDER FORM

	Sections	Update 2017
Complete study	All sections	• € 3,400
One section	Market Analysis	• € 2,700
	Suppliers	• € 1000

Study purchase includes one year update available on-line on UBIC's Extranet

Assistance is also available for specific questions

COMPANY _____
Name _____ Position _____

Tel.: _____ Date _____
Signature _____

UBIC CONSULTING IN THE WORLD



UBIC USA

5020 Campus Drive
NEWPORT BEACH
CA- 92660
Phone : +1 949 296 7544
Fax : +1 949 752 2287

UBIC EUROPE

Techno Ark Sierre 1
CH 3960 SIERRE
Phone : + 41 (0) 27 456 1440
+ 41 (0) 27 456 1444
Fax : + 41 (0) 27 456 1447

IRELAND

Ulysses House
24 Foley St
DUBLIN 1
Phone : 353 1 876 48 05
Fax : 353 1 876 48 04

JAPAN

2nd Floor, IBRI, 2-2 Minatojima-
minamimachi,
Kobe, 650-0047 JAPAN
Phone: +81 50 5850 8474
Fax: +81 50 3488 4318