Business Review

Changing World in Antimicrobial/Antifungal Preservatives

USA, EU28, CHINA, INDIA, BRAZIL, ASEAN, SAUDI ARABIA, UAE, ROW

2018 – 2023

INTRODUCTION

The range of antimicrobial/antifungal ingredients/additives in the food is changing all the time. Both the US and European markets are in need of "clean labels", whilst Legislative Authorities are seeking greater food safety and thus reducing the use of some traditional products. Often hurdle technologies are being introduced to reconcile these demands. The preservative industry has been witnessing some turmoil as a reflection of consumers' desire for 'natural' products. Thus, even within the acidulants category, food producers tend to opt for 'natural' products. On the other hand, the 'ultra-natural' ingredients such as fermentates and polylysine have not lived up to their initial promise across sectors. A number of current chemical preservatives – sorbic, benzoic and hydroxybenzoic acid derivatives – are continuously under threat, but these have significant potential in the developing countries. Even more important, the consumer (encouraged by the major retailers) believes that 'natural is good' and 'chemical is bad'. Thus, the search for 'clean labels' dominates formulation in many higher added-value food categories in the developed countries.

Giract, the ingredients and technologies market research and consultancy specialist has studied the market size, shape and opportunities for the various key food/feed-grade preservatives, most recently in 2014. The new study will thus focus on the changing dynamics towards the demand for 'natural' and 'clean label' ingredients.

OBJECTIVES

- To review current and potential products, their specifications, food applications, limitations, price implications in typical recipes
- To understand the legislative situation in the USA, EU, China, India, Brazil, ASEAN, Saudi Arabia, UAE
- To analyse the producers, their strategies for developing these products, estimated production
- To appreciate the "why" and "why not" concerning the use of various antimicrobials/antifungal preservatives based on in-depth interviews with end-users, covering the different aspects (functional, 'natural', labelling and health)
- To identify 2018 food market size and demand forecasts for 2023 in each region

INGREDIENTS

Benzoates, Sorbates, Acetates, Lactates, Lactic acid, Propionates, Nitrates, Sulphites, Nisin, Natamycin, Fermentates, Lactoferrin, Lysozyme, Others – any commercially significant products identified during the research will be included

GEOGRAPHY

USA, EU28, China, India, Brazil, ASEAN, Saudi Arabia, UAE, RoW

USER SECTORS

Processed meat and fish, bakery and cereals, spreads, dairy, ready meals, sauces dressings & dips, beverages and other food applications

TIMESCALE

2018 – 2023

SUBSCRIPTION

EUR #####

PUBLICATION

November 2018

PROGRAMME

Following an initial review of Giract's in-house database, the key element of the study will be in-depth interviews with major players (producers and users) to derive a real understanding of the driving forces including the possible impact of the functional, 'natural', health and other aspects of the products.

For more info, contact

GIRACT
24, Pré-Colomb
1290 Versoix/Geneva
Switzerland

V. Krishnakumar
Tel: + 41 22 779 0500
info@giract.com
www.giract.com

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REPORT

December 2018

GIRACT

Website:	www.giract.com
Email:	info@giract.com

by

GIRACT

24 Pré Colomb

1290 Versoix/Geneva

Switzerland

Tel: +41 22 779 0500

info@giract.com

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Within this study, Giract has reported its understanding of the current and future positions of individual companies with regard to use of specific ingredients. Whilst these are Giract's honest recording of specific interviews, they must not be considered as an 'official position' of the company in question. Giract accepts no liability for any errors or omissions in its information or forecasts or for any consequential loss.

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1. INTRODUCTION

The range of antimicrobial ingredients/additives in food is changing all the time. Both the US and European markets are in need of "clean labels", whilst legislative authorities are seeking greater food safety and thus reducing use of some traditional products. Hurdle technologies are often being introduced to reconcile these demands. The preservative industry has been witnessing some turmoil as a reflection of consumer search for 'natural' products. Thus, even within the acidulants category, food producers tend to opt for 'natural' products. On the other hand, the 'ultra-natural' ingredients such as rosemary and sage extracts have not lived up to their initial promise. A number of current chemical preservatives – sorbic, benzoic and hydroxybenzoic acid derivatives – are continuously under threat, but these have significant potential in developing countries. Even more importantly, the consumer (encouraged by the major retailers) believes that 'natural is good' and 'chemical is bad'. Thus, the quest for 'clean label' dominates formulation in many higher added-value food categories in developed countries.

Giract, the ingredients and technologies market research and consultancy specialist, studied the market size, shape and opportunities for the various key food/feed-grade preservatives in 2010 across the USA and EU27 and has now updated its research and analysis in this report.

1.1. OBJECTIVES

- To review current and potential products, their specifications, food applications, limitations, price implications in typical recipes
- To understand the legislative situation in the USA, EU, China, India, Brazil, Middle-East (Saudi Arabia, UAE)
- To analyse the producers, their strategy for developing these products, estimated production
- To appreciate the "why" and "why not" concerning the use of various antimicrobials/antifungals based on in-depth interviews with end-users, covering the different aspects (functional, 'natural', labelling and health)
- To identify 2018 food market size and forecast for 2023 in each region

1.2. GEOGRAPHICAL SCOPE

- USA
- Brazil
- EU28
- Middle-East (Saudi Arabia, UAE)
- China
- India
- ASEAN
- RoW

1.3. INGREDIENTS

- Benzoates
- Sorbates
- Acetates
- Lactates
- Lactic acid
- Propionates
- Nitrates
- Sulphites
- Nisin
- Natamycin
- Fermentates
- Lactoferrin
- Lysozyme
- Others

1.4. DEMAND SECTORS

- Processed meat and fish
- Bakery and cereals
- Spreads
- Dairy
- Ready meals
- Sauces, dressings & dips
- Beverages
- Other food applications

1.5. TIMESCALE

Current: 2018

Forecast: 2023

Glossary

bio	'000 000 000, billion
dsb	dry strength basis
kg	kilogram
kt	'000 tons
ktpa	'000 tons per annum
mio	'000 000, million
p.a.	per annum
ppm	parts per million
tons	'000 kilograms
tpa	tons per annum
tpd	tons per day
tpm	tons per month

2. EXECUTIVE SUMMARY

2.1. PRODUCTION

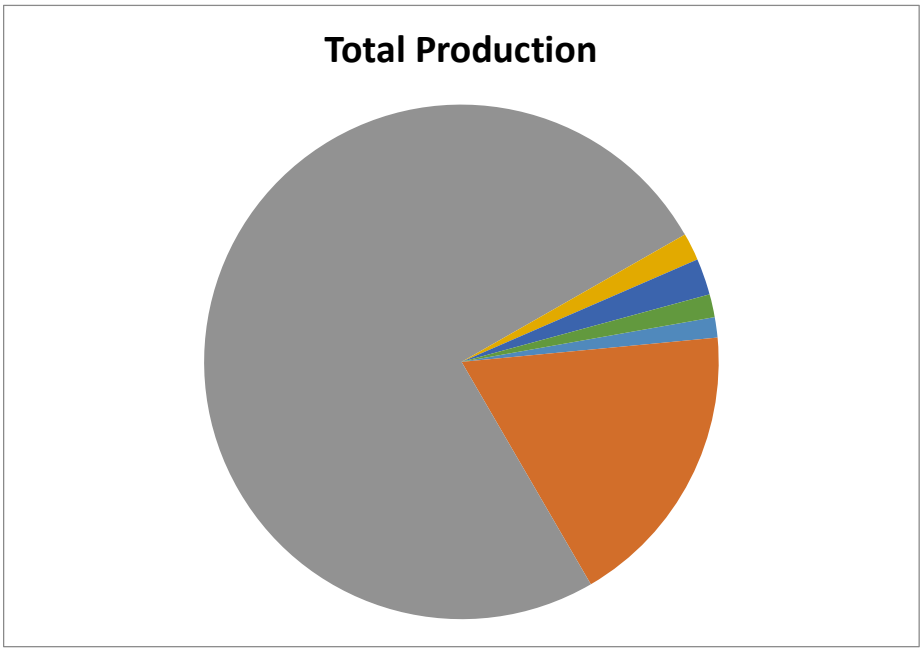
Preservatives Production by Region, 2018 **kt**

Region	Benzoates	Sorbates	Acetates	Lactates	Lactic acid	Propionates	Nitrites/Nitrates	Sulphites/Sulphates	Citrates	Nisin	Natamycin	Fermentates	Lactoferrin	Lysozyme	Polylysine	Total
USA																
Brazil																
Europe																
China																
India																
ASEAN																
Middle East																
Total																

Source: Giract, based on interviews and analysis

is by far the largest producer of preservatives globally, accounting for almost 75% of global production in volume terms. Sulphites and nitrates together account for over ##% of the total preservative volumes globally with their production concentrated in China; however, ## regions does overtake China in nitrate supply.

Preservative Production by Region, 2018

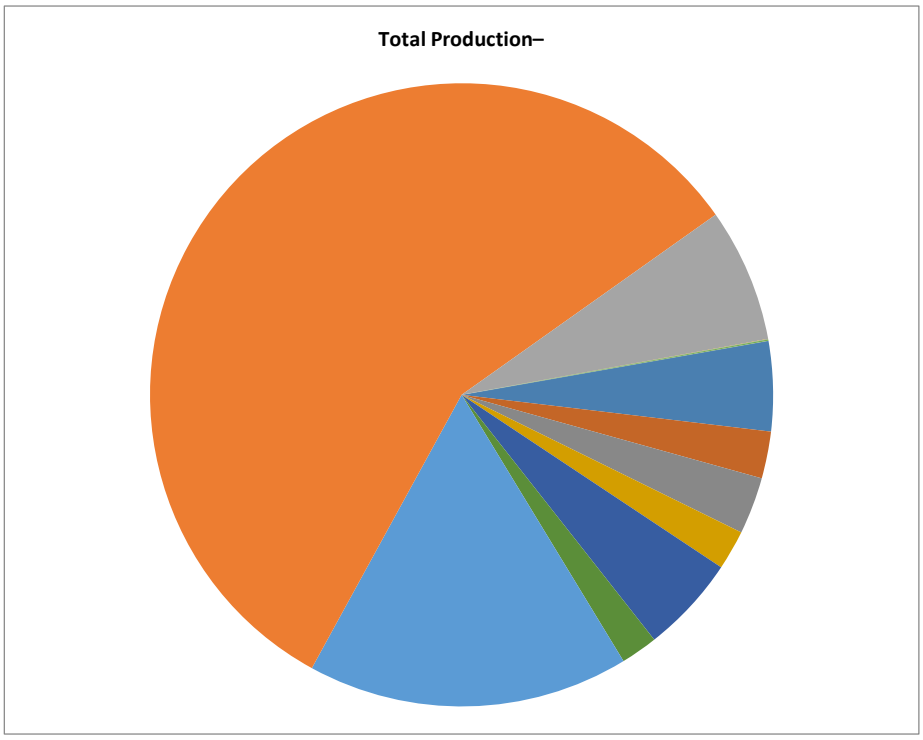


Citrates, lactic acid and lactates, benzoates, acetates, and propionates are the other main synthetic preservatives, which are largely manufactured in ##. ASEAN also has a significant production of ## and ##, solely accounted for by Corbion.

is also the leading producer of nisin and natamycin, followed by Europe. It is also the only major producer of polylysine globally.

Lactoferrin and lysozyme production was identified only in the ## and ##.

Preservative production by Ingredient – 2018



2.1.1. GLOBAL PRESERVATIVE SUPPLY – VOLUME AND VALUE SHARES

Global preservatives production is estimated to be worth around USD ## bio. ## is the largest shareholder in both value (71%) and volume (75%) terms; however, the value percentage share is lower owing to the dominance of low value artificial preservatives. On the other hand, the ##, which accounts for only about 1% of global production by volume, accounts for ##% by value. This is due to the production of higher value natural preservatives such as ## and ##.

Natural preservatives have a much higher unit cost than artificial ingredients, and the use of natural preservatives is more often concentrated in developed markets.

Global Volume and Value Share Comparison by Region, 2018 %

Regions	Volume	Value
China		
Europe		
India		
ASEAN		
Brazil		
USA		

Source: Giract, based on database, interviews and analysis

Global Volume and Value Share Comparison by Ingredient, 2018 %

Regions	Volume	Value
Benzoates		
Sorbates		
Acetates		
Lactates		
Lactic acid		
Propionates		
Nitrates/nitrites		
Sulphates/sulphites		
Citrates		
Nisin		
Natamycin		
Fermentates		
Lactoferrin		
Lysozyme		
Polylysine		

Source: Giract, based on database, interviews and analysis

2.1.2. KEY PRESERVATIVE SUPPLIERS

Benzoates, 2018 **kt**

Region	Company	Supply
Brazil	Albemarle Corporation	
China	Benxi Black Horse Chemical Industry & Commerce Co.,Ltd.	
China		
China		
China		
EU28		
India		
India		
USA		
Global		
Global	**Total**	

Source: Giract, based on interviews and analysis

Sorbates – 2018 **kt**

Region	Company	Volume
Brazil		
Brazil	Univar	
China	Daicel Nanning Food Ingredients Co., Ltd.	
China		
China		
EU28		
India		
Global		
Global	**Total**	

Source: Giract, based on interviews and analysis

Acetates – 2018 kt	Company	Volume
Brazil		
Brazil		
China		
China		
EU28		
India		
India		
USA		
USA		
Global		
Global	**Total**	

Source: Giract, based on interviews and analysis

Lactic acid and Lactates – 2018 **kt**

Region	Company	Lactates	Lactic acid
ASEAN			
Brazil			
China			
China			
China			
China			
EU28			
EU28			
EU28			
India			
India			
USA	Corbion		
Global			
Global	**Total**		

Source: Giract, based on interviews and analysis

Propionates – 2018 kt

Region	Company	Volume
Brazil		
China		
China		
China		
China		
EU28		
EU28		
India		
India		
India		
India		
USA		
USA	Corbion	
USA		
USA		
USA		
USA		
Global		
Global	**Total**	

Source: Giract, based on interviews and analysis

Nitrites/Nitrates – 2018 kt

Company	Nitrites/Nitrates
Brazil	
China	
China	
EU28	
India	
India	
Global	
Total	**1470.9**

Source: Giract, based on interviews and analysis

Sulphites/Sulphates – 2018 kt

Region	Company	Sulphites/Sulphates
ASEAN		
Brazil		
China		
China		
EU28		
EU28		
India		
India		
India		
India		
USA		
USA		
USA		
Global		
Global	Total	

Source: Giract, based on interviews and analysis

Citrates – 2018 kt

Region	Company	Volume
ASEAN		
Brazil		
Brazil		
China		
China		
EU28		
EU28		
India		
India		
India		
Global		
Global	Total	

Source: Giract, based on interviews and analysis

Nisin and Natamycin – 2018 kt

Region	Company	Nisin	Natamycin
Brazil			
Brazil			
China			
China			
EU28			
EU28			
Global	Total		

Source: Giract, based on interviews and analysis

Other natural preservatives – 2018 kt

Region	Company	Fermentates	Lactoferrin	Lysozyme	Polylysine
Brazil					
Brazil					
Brazil					
China					
China					
EU28					
EU28					
EU28					
EU28					
EU28					
USA					
USA					
USA					
USA					
USA					
Global	Total				

Source: Giract, based on interviews and analysis

2.2. AVAILABILITY OF PRESERVATIVES FOR FOOD & NON-FOOD APPLICATIONS

Global Volume Share of Preservative Demand in Food & Non-food, by Region, 2018

%

	Food	Non-food
USA		
Brazil		
EU28		
Middle East		
China		
India		
ASEAN		

Source: Giract, based on database, interviews and analysis

###is the only region where the percentage of preservative use in food is larger than that in non-food. The general pattern in all other regions is a non-food demand which hugely exceeds that of food. Non-food applications are essentially pharma, personal care, ##, ## and other ## and agricultural applications. Nitrates and ### are more commonly used in agricultural and ## applications. Natural preservatives, such as nisin, natamycin, lysozyme and lactoferrin, are generally directed towards ### and supplements.

Global Volume Share of Preservative Demand in Food & Non-food, by Ingredient, 2018 %

	Food	Non-food
Benzoates		
Sorbates		
Acetates		
Lactates		
Lactic acid		
Propionates		
Nitrates/nitrites		
Sulphates/sulphites		
Citrates		
Nisin		
Natamycin		
Fermentates		
Lactoferrin		
Lysozyme		
Polylysine		

Source: Giract, based on database, interviews and analysis

Note: the above table does not include ROW volumes

2.3. PRICING

Prices by Region, 2018 USD/kg

Preservative	USA	Brazil	EU28	China	India	ASEAN
Bezoates						
Sorbates						
Acetates						
Lactates						
Lactic acid						
Propionates						
Nitrites/Nitrates						
Sulphites/Sulphates						
Citrates						
Nisin						
Natamycin						
Fermentates						
Lactoferrin						
Lysozyme						
Polylysine						

Source: Giract, based on interviews and analysis

2.4. GLOBAL DEMAND FOR PRESERVATIVES IN FOOD, 2018

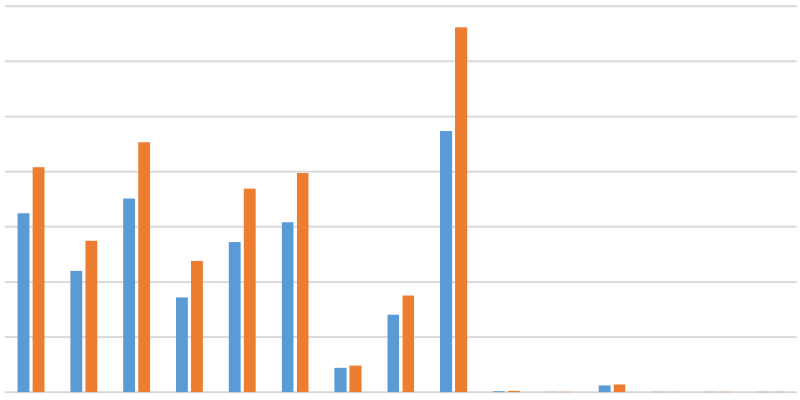
China is the largest global consumer of preservatives in food. It is also the second fastest growing market for food grade preservatives, growing at a CAGR of ##%. ## are the other key consumers of preservatives in food, driven by their large processed food market. Growth in demand for preservatives in the ## and ## is estimated at ##% per annum respectively. This slow growth is attributed to the high maturity and strong prevalence of clean label and natural trends in these markets.

is the fastest growing market for preservatives globally growing at a CAGR of ##%, however from a considerably smaller base than the other major markets. ## also has a significant demand for artificial preservatives.

Preservatives Demand in Food, by Region, 2018-2023

is the largest class of preservatives used in foods globally. However, they are mostly used for their function as acidulants rather than as preservatives. ##, sorbates, ## and ## are the widest used artificial preservatives globally. The group of preservatives seen as being more natural - nisin, ##, fermentates, ## and ## - are the choice in the developed markets of EU28 and ##. Use of very small volumes of ## and natamycin in developing markets, especially in combination with artificial preservatives such as sorbates and ##, is essentially in ## products to prevent spoilage against a wide array of microbes. ##, another preservative considered to be natural, is used exclusively in China, in dairy and meat products.

Preservatives Demand in Food, by Ingredient, 2018-23



Apart from their essential role in ensuring food safety, 'natural' and 'clean label' are the factors driving the growth of the preservative market in ## and USA. This has resulted in a higher growth rate for fermentation based natural preservatives; however, this remains small as there is a strong demand for "free from preservatives" products in these markets.

#####

2.4.1. CURRENT & FORECAST DEMAND

Current & Forecast Demand by Ingredient, Global, 2018-23

	2018	2023	CAGR
	tons	tons	%
Benzoates			
Sorbates			
Acetates			
Lactates			
Lactic Acid			
Propionates			
Nitrites/Nitrates			
Sulphites/Sulphates			
Citrates			
Nisin			
Natamycin			
Fermentates			
Lactoferrin			
Lysozyme			
Polylysine			
Total			

Source: Giract, based on interviews and analysis

Note – The demand estimates do not include ROW

and their derivatives are projected to grow at a much higher rate during the forecast period due to their more natural image. The demand for synthetic preservatives is expected to be driven by the growth of the ## sector in developing markets. The penetration of artificial ingredients is not expected to ## due to the negative perception among consumers across the world. Penetration of nitrates is expected to decline all over the word due to their highly negative image.

Current & Forecast Demand by Sector, Global, 2018–23

	2018	2023	CAGR
	tons	tons	%
Processed meat			
Bakery and cereals			
Spreads			
Dairy			
Ready meals			
Sauces, dressings and dips			
Beverages			
Other foods			
Total			

Source: Giract, based on interviews and analysis

Note – The demand estimates do not include ROW

Current & Forecast Demand by Region, 2018–23

	2018	2023	CAGR
	tons	tons	%
USA			
Brazil			
EU28			
Middle East			
China			
India			
ASEAN			
Total			

Source: Giract, based on interviews and analysis

2.5. REGIONAL SUMMARIES

2.5.1. USA

###, largely driven by the bakery sector, are the most widely used antimicrobial/antifungal preservatives in the ### (###ktpa).

Benzoates (##ktpa) and sorbates (##ktpa.) are also used in large volumes due to their wide-spectrum of activity.

Although acetates, lactates, citrates and their acids are found in many food products, their demand is boosted by use in ## and ## (acetates, lactates, and their acids) and ## (citrates and citric acid).

Consumers are increasingly selecting clean-labels and therefore, benzoate growth is expected to slow down (CAGR of ##% to 2023). The situation will be exacerbated by the decline in consumption of carbonated drinks (###% CAGR to 2023), which contain benzoates.

###.

2.5.2. BRAZIL

2.5.3. EU28

2.5.4. MIDDLE EAST

2.5.5. CHINA

2.5.6. INDIA

2.5.7. ASEAN

3. USA

3.1. SUMMARY

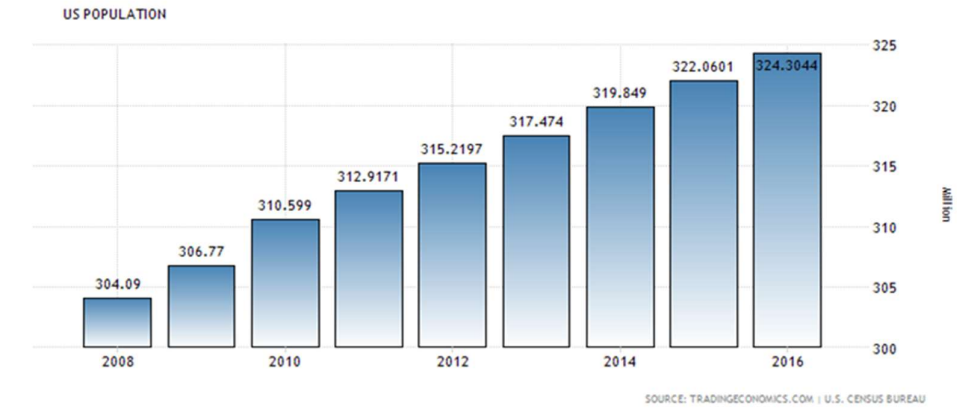
- Propionates, largely driven by the bakery sector, are the most widely used antimicrobial/antifungal preservatives in the USA (###ktpa)
- Benzoates (###) and sorbates (###.) are also used in large volumes due to their wide-spectrum of activity
- Although acetates (###), lactates (###), citrates (###), and their acids are found in many food products, their demand is boosted by use in processed meat and fish (acetates, lactates, and their acids) and carbonated drinks (citrates and citric acid)
- ########

3.2. FOOD INDUSTRY INTRODUCTION

- The population of the USA is 327 mio (July 2017 est.)
- In 2018, it has an 82% urban population, growing at a rate of 1%
- Life expectancy at birth is 80 years
- The country's GDP was USD 20 tri in 2017, which equates to USD ## per capita for 2017
- ####

Population trend, USA **mio**

2009	2011	2013	2015	2017	CAGR%



Source: tradingeconomics.com; CIA World Factbook

- Total retail and food service sales in the USA was ## tri in 2015
- ## and Kroger dominated retail sales in 2017

3.3. REGULATIONS

- Food ingredients legislation is described in the US FDA Code of Federal Regulations (CFR). This legislation was updated on April 1, 2018

Federal Regulations Describing Preservatives Food Applications

CFR Section	Preservative (salts and acids)	Status
184.1	Benzoates	GRAS

Source: US FDA

- A food to which a chemical preservative(s) is added shall, except when exempt pursuant to 101.100 bear a label declaration stating both the common or usual name of the ingredient(s) and a separate description of its function, e.g., "preservative", "to retard spoilage", "a mold inhibitor", "to help protect flavor" or "to promote color retention"

3.4. SUPPLY SCENARIO

Preservatives, Availability, USA, 2018 kt

Product	Production	Import	Export	Availability	Of which, Food use
Benzoates					
Sorbates					
Acetates					
Lactates					
Lactic acid					
Propionates					
Nitrates/Nitrites					
Sulphites					
Citrates					
Nisin					
Natamycin					
Fermentates					
Lactoferrin					
Lysozyme					
Others					

Source: Giract, based on interviews and analysis

- The majority of imported preservatives come from ##, with the exception of nisin and natamycin, which are mainly produced in ##

Supplier Product Mapping, USA, 2018 kt

Company		Benzoates	Sorbates	Acetates	Lactates	Lactic acid	Propionates	Nitrites/Nitrates	Sulphites/Sulphates	Citrates	Nisin	Natamycin	Fermentates	Lactoferrin	Lysozyme	Polylysine	Others	Total
Celanese																		
Emerald Kalama																		
Kemira																		
Corbion	M																	
Eastman Chemical Company																		
AB Mauri																		
Kemin Foods	M																	
Glanbia	M																	
DSM	D																	
DuPont	M/D																	
BASF	M																	
Esseco	D																	
Chr Hansen	M																	
Kerry	M																	
Niacet	M																	
Galactic																		
ADM																		
INEOS Calabrian																		
Total																		

M = manufacturer; D = distributor

Source: Giract, based on interviews and analysis

- In addition to the manufactures identified above, there are a number of smaller manufacturers expanding their portfolios of natural preservatives

Pricing of Preservatives, USA, 2018

	USD/kg
Benzoates	
Sorbates	
Acetates	
Lactates	
Lactic acid	
Propionates	
Nitrites/Nitrates	
Sulphites/Sulphates	
Citrates	
Nisin	
Natamycin	
Fermentates	
Lactoferrin	
Lysozyme	
Polylysine	

Note: Prices vary by manufacturer/distributor

Source: Giract, based on interviews

3.5. DEMAND SECTORS

3.5.1. PROCESSED MEAT AND FISH

Processed Meat & Fish Market Size (kt) and Growth (CAGR%), USA, 2013-18-23

	2013	2018	2023	CAGR%	CAGR%
	kt	kt	kt	2013-18	2018-23
Ambient meat					
Chilled processed meat					
Frozen processed meat					
Processed fish					
Delicatessen					
Total					

Source: Giract, based on Canadean

- Meat and poultry form a major portion of the US agricultural sector. Per capita meat consumption is high in the USA, the world's largest consumer of processed meat

- The processed meat category is highly-consolidated, with the top 3 producers—Tyson Foods, JBS, and Smithfield Foods—jointly occupying 65% of the market

Market Shares of Key Players 2017-2018

Company	Market share (%)
Tyson Foods	
Smithfield Foods	
Pilgrim's Pride	
Hormel Foods	
Others	
Total	

Source: Giract, based on retail analysis and trade data

Preservatives Use in Processed Meat and Fish, USA

	2018	2023	CAGR
	tons	tons	%
Benzoates			
Sorbates			
Acetates			
Lactates			
Lactic acid			
Propionates			
Nitrites/Nitrates			
Sulphites/Sulphates			
Citrates			
Nisin			
Natamycin			
Fermentates			
Lactoferrin			
Lysozyme			
Polylysine			
Others			
Total			

Source: Giract, based on database and interviews

Typically, the processed meat and fish category is a major end-user of preservatives due to the toxicological risks associated with food-borne pathogens in this category (for

example, *C. botulinum*). Frozen meats and fish are partially protected by low-temperature storage, and tinned meats are hot-packed for protection

- In particular, the chilled meats sub-category is at highest risk of food spoilage; however, it is also the sector under the greatest clean-label pressure

Examples of Processed Meat and Fish Containing Preservatives Identified During Retail Analysis

Product	Brand	Manufacturer	Preservative
Bacon, breakfast sausage, ham, marinated pork	Krakus	Smithfields Foods	Sodium ascorbate, ##
Potted Meat			
Pulled beef, pork, chicken			
BBQ Chicken			
Smokehouse Ham			
BBQ Pork			
Hot Dogs			
Uncured Pepperoni			
Frankfurters			
Bacon, breakfast sausage, ham, marinated pork			
Crispy chicken, chicken nuggets			
Breaded Whiting			

Source: Giract retail analysis

3.5.2. BAKERY AND CEREALS
3.5.3. SPREADS
3.5.4. DAIRY
3.5.5. READY MEALS
3.5.6. SAUCES, DRESSINGS AND DIPS
3.5.7. BEVERAGES
3.5.8. OTHER FOOD APPLICATIONS

3.6. DEMAND SCENARIO

Current Demand by Sector, USA, 2018 tons

	Processed Meat & Fish	Bakery and Cereals	Spreads	Dairy	Ready Meals	Sauces, dressings, dips	Beverages	Other Foods	Total
Benzoates									
Sorbates									
Acetates									
Lactates									
Lactic acid									
Propionates									
Nitrites/Nitrates									
Sulphites/Sulphates									
Citrates									
Nisin									
Natamycin									
Fermentates									
Lactoferrin									
Lysozyme									
Polylysine									
Others									

Others includes snacks, fruit & vegetable preparations, supplements, confectionery

Source: Giract, based on database and interviews

Forecast Demand by Sector, USA, 2023 tons

	Processed Meat & Fish	Bakery and Cereals	Spreads	Dairy	Ready Meals	Sauces, dressings, dips	Beverages	Other Foods	Total
Benzoates									
Sorbates									
Acetates									
Lactates									
Lactic acid									
Propionates									
Nitrites/Nitrates									
Sulphites/Sulphates									
Citrates									
Nisin									
Natamycin									
Fermentates									
Lactoferrin									
Lysozyme									
Polylysine									
Others									

Others includes snacks, salads, supplements, wine & beer, pet food, confectionery

Source: Giract, based on database and interviews

- As consumers increasingly select clean-labels, the usage growth of benzoates is expected to slow, with a CAGR of ## to 202#

3.7. DEMAND PERSPECTIVES

Summary perspectives

Company	Sector	Comments
Curley's Custom Meats		
General Mills		
Hershey Company		
Kellogg Company		
Kraft Heinz		
McDonald's	Processed meat	Has removed artificial ingredients, such as calcium propionate and sodium benzoate, to satisfy consumer demands of healthy eating. .
Noodles & Company		
Russell Stover		
Sabra Dipping Company		
Subway		

3.7.1. GENERAL MILLS

Number One, General Mills Boulevard
Minneapolis, MN-55426
USA
Tel: +1 7637647600
www.generalmills.com

Relevant products

Ready-to-eat cereals, refrigerated yogurt, soup, meal kits, refrigerated and frozen dough products, dessert and baking mixes, frozen pizza and pizza snacks, grain, fruit, and savory snacks, as well as organic products, including yogurt and nutrition bars

Company background

- The company was founded in 1866 and is based in Minneapolis, Minnesota
- General Mills manufactures and markets branded consumer foods worldwide. It also supplies branded and unbranded food products to the North American foodservice and commercial baking industries; and manufactures and markets pet food products, including dog and cat food

- The company markets its products under the Annie's, Betty Crocker, Bisquick, Blue Buffalo, BLUE Basics, BLUE Freedom, BLUE Wilderness, Bugles, Cascadian Farm, Cheerios, Chex, Cinnamon Toast Crunch, Cocoa Puffs, Cookie Crisp, EPIC, Fiber One, Food Should Taste Good, Fruit by the Foot, Fruit Gushers, Fruit Roll-Ups, Gardetto's, Go-Gurt, Gold Medal, Golden Grahams, Häagen-Dazs, Helpers, Jeno's, Jus-Rol, Kitano, Kix, La Salteña, Lärabar, Latina, Liberté, Lucky Charms, Muir Glen, Nature Valley, Oatmeal Crisp, Old El Paso, Pillsbury, Progresso, Raisin Nut Bran, Total, Totino's, Trix, Wanchai Ferry, Wheaties, Yoki, and Yoplait brands
- General Mills sells its products directly, as well as through broker and distribution arrangements to grocery stores, mass merchandisers, membership stores, natural food chains, e-commerce retailers, commercial and non-commercial food service distributors and operators, restaurants, convenience stores, and pet specialty stores, as well as drug, dollar, and discount chains

Awareness and use of preservatives by the company

- Citric acid and potassium sorbate are used in most products. Citric acid is derived from microbial sources
- The company uses both traditional and new generation preservatives and decides on preservatives according to the requirement of the product while keeping in mind the taste profile of the consumers
- The price of preservatives has been stable. The company chooses its preservative supplier based on proven track record, quality of the product and the stringent specifications demanded by its quality and assurance teams
- Consumers prefer natural ingredients in their food products to synthetic preservatives and expect clear labelling of ingredients and their source in the products to avoid ambiguity. The company adheres strictly to FDA labelling regulations