
THE WORLD PUFAS INGREDIENT MARKET

Science Market Regulation

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SCIENCE - MARKET - REGULATION - 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

New trends and outlook
Use of ingredients: volumes and value
Manufacturers profiles
User's opinion
Regulation

Food Segements

Food industry
Functional Food
Food supplement
Infant nutrition

Ingredients Covered

DHA
ArA
EPA

Countries Covered

North America
Western Europe
Asia

THE WORLD PUFAS INGREDIENT MARKET

OBJECTIVES MARKET

Market Trends

Applications in Food
segment

Use of ingredients: volume
and value

Outlook

MANUFACTURERS

Food industry usage and
needs

RESEARCH

New Ingredients

Research and Technical
Aspects

ENVIRONMENT

Regulatory aspects

INTRODUCTION

Definition

Fatty acids have several biological functions in the organism. They provide energy, they form part of the membranes surrounding cells. Besides, they are precursors of some specific chemical messengers known as prostaglandines, tromboxanes and leucotrienes. These chemical messengers control an important number of biochemical reactions, that include growth, cell division, blood pressure, blood coagulation, immune reactions and tissue inflammation. It is also now widely recognized that LC-PUFAs play an important role in infant development and the maintenance of health in mature human beings.

There are two family of long chain polyunsaturates fatty acids (called LC-PUFAs), the omega-6 and the omega-3 fatty acids.

Omega-3 fatty acids

The most important omega-3 fatty acids are docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). Although fatty fish and fish oil are often the main source of n-3 polyunsaturated fatty acids (PUFAs), there are numerous other sources, including vegetable oils, nuts, green leafy vegetables, microalgae (they can produce up to 40-50% of their biomass in omega-3 in triglyceride form) and fungi.

DHA and EPA have several very important health properties and they take part in :

- Infant development
- Cardiovascular system
- Body's defense
- Nervous system and behaviour (schizophrenia, aggression, hyperactivity, depression)
- Cancer prevention

Emphasis has been always put on ω -3 Pufas and mainly EPA and DHA (already, before world war II, mothers used to give cod liver oil to children) but since a few decades scientists insist on the fact that the most important thing is the ω -6 / ω -3 ratio (ideally 4-5/1 instead of 20-40/1 in most developed countries) of the diet. So a possible shift will be to bring appropriate mixtures of Pufas instead of single kinds. The main source at the moment remain fish oils but they are more and more contaminated by various pollutants which are hardly removed, so the industry will look more and more at vegetable sources (organic of course) to get bigger supplies at cheaper costs (may be they would try to select or genetically modify some plants). There has been discussions and investigations around the transformation of some ω -6 Pufas (like ALA – alpha linolenic acid) into ω -3 like EPA or DHA and their use as indirect sources of ω -3. Studies showed a low transformation yield of ω -6 into ω -3 (average 5-6% in men; 9-14% in women), so direct ingestion of fish oil (rich in both EPA & DHA) remains much more efficient.

Market of Fats

In the world of fats, a high degree of disparity can be noticed in the eating habits of the different geographical zones. The Nordic countries are more solid fat consumers which have swapped margarine for butter, whilst the Mediterranean countries are mainly consumers of liquid fats, and therefore vegetable fats, and because of dietary concerns have turned to olive oil.

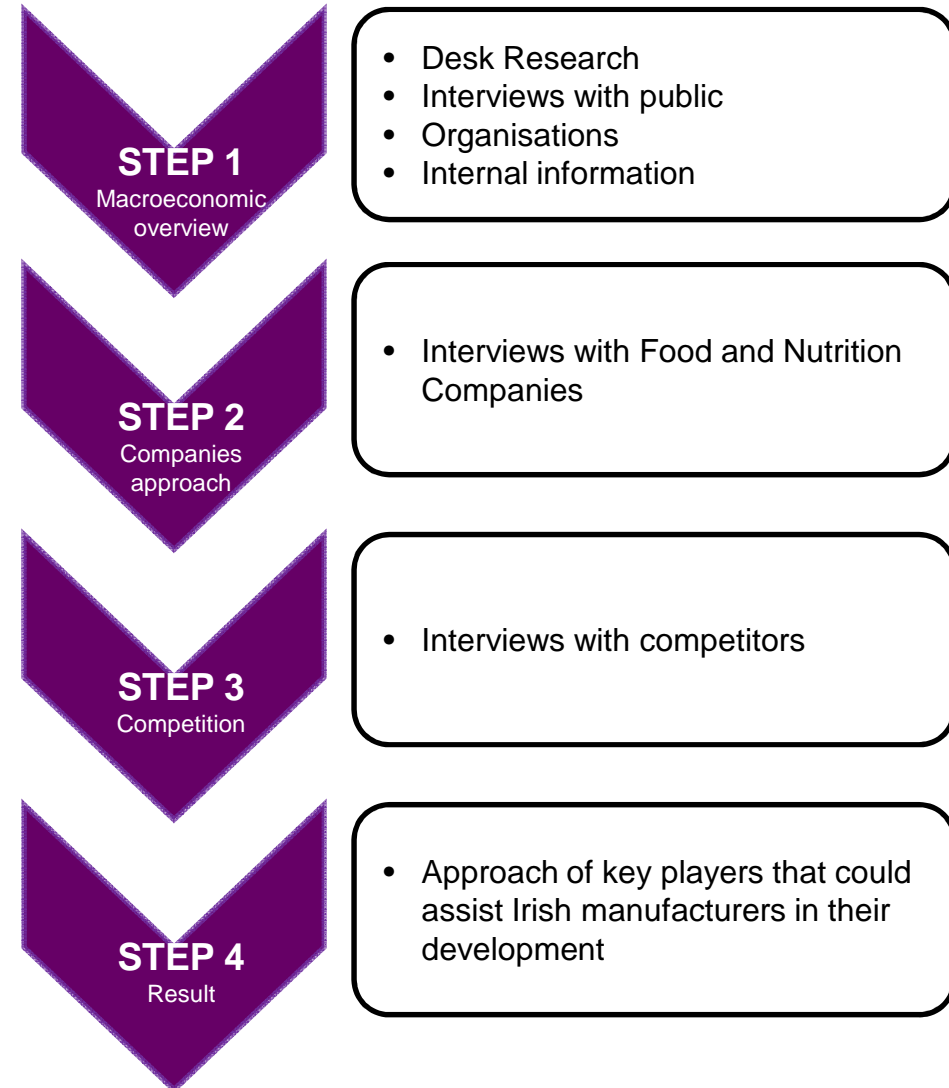
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Potential market segments

Omega-3 polysaturated fatty acids are used to fortify a wide range of food stuffs including infant formula, snacks, margarins, bakery products and ready meals and have been linked to lower incidence of CVD and anti-inflammatory properties. However, to date, success with such products has been limited, possibly due to lack of consumer awareness of the significance of these fatty acids to health.

Market segments	Characteristics	Products
Fat & Spreads	Depends on the geographical area : solid fats in the northern countries, and liquid fats in the southern ones	Margarines, oils, chips, salad dressings
Food Supplements	Great growth in the US	Multi-vitamins supplements
Dairy Products & Eggs	Very dynamic segment worldwide	All, especially products for seniors and women
Confectionery	Depends on the regulation in each area Numerous innovations in Japan	All
Bakery, Cereals, Biscuits	Steady growth worldwide	Breakfast cereals
Non Alcoholic Beverages	Great growth of enriched drinks, particularly in Japan	Fruit juices, smoothies

METHODOLOGY



THE WORLD PUFAS INGREDIENT MARKET

SAMPLE !: POSSIBLE INTERVIEWS OF SUPPLIERS

- BASF (DK)
- Martek Biosciences Corp.(USA)
- Cargill (G)
- Monsanto (USA)
- Denofa (NW)
- Omega Protein Inc. (USA)
- DSM (NL)
- Loders Croklaan (NL)
- Epax (NW)
- Belovo (B)

SAMPLE 2: EXAMPLE OF INTERVIEWS OF INDUSTRIAL USERS

Baby food & clinical

- Abbott (USA)
- Danone (F)
- Friesland (NL)
- Maeil Dairy Industry (Ko)
- Mead Johnson (USA)
- Morinaga (J)
- Nutricia (NL)
- Wyeth Lab. (USA)
- Snow Brand (J)

Dairy Products - Ice-creams

- Danone (F)/Danonn (USA)
- Lactalis (F)
- Meiji milk (J)
- Molkerei Strothmann (G)

- Morinaga (J)
- Namyang Dairy (Korea)
- Nestlé (CH)
- Parmalat (I)
- Seoul Dairy Co. (Korea)
- Hochdorf (CH)
- Unilever (NL)

Food supplements /Dietetic products

- Ashland Nutritionals (USA)
- Arkopharma (F)
- Daniel Jouvence (F)
- Distriborg (F)
- Joe Weider (USA)
- Quaker Oats (USA)
- Lab. Yves Ponroy (F)
- Life plus (USA)
- Merck (G)
- Mead Johnson Nutritionals (USA)
- Nature's resource (USA)
- Nutrition & Santé (F)
- Nutrinov (F)
- Ritter (G)
- Roche (CH)

Confectionery

- Chupa chups (SP)
- CSM (NL)
- Haribo (G)
- Hershey Foods (USA)
- Lotte confectionery (Ko)
- Kraft-Jacobs Suchard (G/CH)
- Mars (USA)
- Ritter (G)
- Snow brand (J)

Beverages - Sport beverages

- Dohler (G)
- Cadbury Schweppes (UK)
- California Day-fresh foods(USA)
- Coca-cola (USA)
- Jamba juice (USA)
- Pernod Ricard (F)

Bakery - Cereals - Snacks

- Barilla (I)
- Braun Backmittel (G)
- Heinz (USA)
- Danone (Biscuits) (F)
- Kellog's (USA)
- Manor Bakeries (UK)
- Nabisco (USA)
- Nestlé (CH)
- Pains Jacquet (F)
- Quaker (USA)

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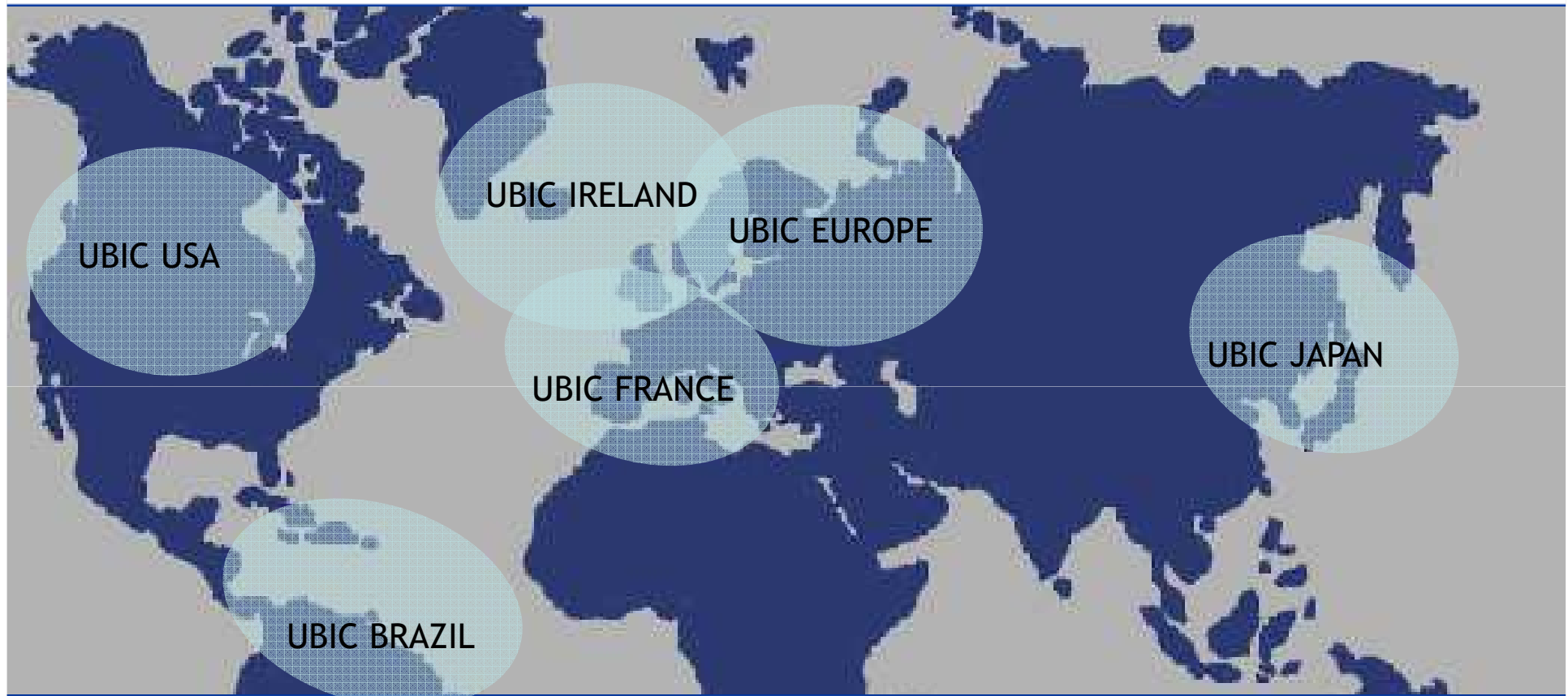
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