



EVERYTHING YOU ALWAYS
WANTED TO KNOW ABOUT...

HEALTH INGREDIENTS





EATING MORE HEALTHILY IS OUR COMMON GOAL

The key role of health ingredients

Diet should be varied, balanced and adapted to cover everyone's nutritional needs.

Food consumption studies show that nutritional recommendations are not always followed. Nutritional content is sometimes insufficient. Despite repeated nutritional messages, diet habits do not change or change very little. Therein lies the importance of health ingredients. Their use contributes to readjusting nutritional intake and to providing specific health benefits.

There are several families of health ingredients: probiotics, food fibres, plant extracts and derivatives (carotenoids, phytosterols, etc.), fats (omega-3), proteins, vitamins and minerals...

Health ingredients are used in different types of food products for general consumption, such as certain breakfast cereals, and in food products aimed at population groups with specific nutritional needs: infants, young children, the elderly, athletes, individuals affected by certain pathologies. They can also be found in the form of dietary supplements.



ONGOING RESEARCH

Research on the topic of "healthy ageing" has been carried out in the face of the ageing of the European population and the anticipated increase in healthcare expenses. In practical terms, the work involves the decrease of risk factors associated with diseases: age-related macular degeneration, memory loss, osteoporosis, joint diseases, etc. The fight against undernutrition is another focus of study: rediscovering the joy of eating healthily.

As regards the battle against food allergies, new approaches are being tested to come up with ingredients able to replace wheat flour. These innovations rely on the synergy between ingredients: prebiotics, probiotics and alternative sources of proteins.

THE ABCs OF HEALTH INGREDIENTS

DEFINITIONS AND USES

AMINO ACIDS

Amino acids are the components of peptides and proteins. The string of amino acids endows proteins with specific chemical properties and a highly individual function. They are critical to cell regeneration and numerous biological processes. There are 20 standard amino acids. In adults, 12 of them are produced by the body: aspartic acid, glutamic acid, alanine, arginine, asparagine, cystine, glutamine, glycine, histidine, proline, serine, and tyrosine.

The remaining eight are said to be "essential" to adults: isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. Histidine is also an amino acid essential to children.

CAROTENOIDS

This large family of pigments takes its name from the carrot. It includes a few true stars, starting with beta-carotene. In addition to its role as an antioxidant, beta-carotene is a precursor of vitamin A and hence contributes to vitamin A intake. Three other carotenoids play an important role, i.e., lutein and zeaxanthin mainly stored in the retina where they are said to contribute to the prevention of age-related macular degeneration and lycopene contained in tomatoes that are said to have antioxidant properties.

CULTURES

Cultures are living microorganisms. They include bacteria (*Lactobacillus*, *Bifidobacterium*, etc.) and yeasts. These cultures are naturally present in the digestive system as well as in milk and plants. They have traditionally been used for their technological impact on food (bread, yogurt, beer, etc.). For example, it is thanks to cultures, that humans, for more than 4,000 years, have preserved milk in the form of lassi, kefir, cheese, or yogurts. By fermenting milk, cultures such as lactic acid bacteria contribute to providing finished products with flavour, aroma, and texture.

Probiotics: probiotics have a documented beneficial effect on health such as balanced intestinal flora and immune defence system.

ESSENTIAL

Nutriments are "essential", when the body is unable to produce them alone in sufficient quantities whilst they are critical to the body's proper functioning. It is therefore imperative that they be provided by diet, enriched foodstuffs or dietary supplements.

FIBRES

Food fibres are complex carbohydrates that are neither digested nor absorbed by the small intestine and reach the large intestine intact. These fibres can be naturally present in food, synthesised or extracted from raw materials such as acacia gum, cereals, sugar beets, apples, citrus fruits, algae, etc.

They have a proven effect, notably on intestinal transit or on a drop in cholesterol.

Prebiotic fibres selectively promote the multiplication of certain bacteria in the digestive system and hence have scientifically proven beneficial effects on the balance of the intestinal flora and on immune defences. According to recent studies, prebiotic fibres could play a role in weight control.

LACTASE

Lactose-intolerant individuals are unable to digest this milk sugar, since the enzyme that allows doing so, lactase, is absent or insufficiently present in their intestines.

Industrial use of lactase allows to produce low-lactose or lactose-free milks. Dietary supplements provide lactase to intolerant individuals.

MICROALGAE

Having made their appearance on earth more than 21/2 billion years ago, microalgae are at the origin of life. More than 30,000 species have been identified, but only a few dozen are used industrially. A durable vegetable resource, microalgae are recognised for their nutritional composition: proteins, lipids of which omega-3, a wide array of vitamins and minerals, several pigments (carotenoids, chlorophylls, etc.).

MINERALS

Minerals represent a large family of inorganic elements found in our diet and some of which are essential. Among these substances, macro-elements or major trace elements are distinguished (sodium, potassium, chlorine, calcium, phosphorus, and magnesium) and oligo-elements or trace elements (iron, zinc, copper, selenium, iodine, etc.). They contribute to a large number of vital processes and some of them play a recognised role in the decreased risk factors for certain diseases.

OMEGA-3

Sub-group of the lipid family, long-chain polyunsaturated fatty acids are "essential". They are present in oily fish and can also be produced by microalgae. Omega-3 is part of the cell membranes and notably provides them with their elasticity. It plays a critical role in the development of the brain and the eyes as well as in normal heart function.

PEPTIDES

A peptide is made up of two or more amino acids. The ones containing a vast number of amino acids are referred to as proteins. The 20 amino acids can combine in multiple ways, thus forming a large diversity of peptides of which some are said to have a beneficial effect on human health (impact on obesity, stress, blood pressure, recovery after exertion among athletes, etc.).

SWEETENERS

Sweeteners provide a solution to reduce calorie content. In fact, they add few or no calories and allow decreasing the quantity of sugar in recipes. Products containing these sugar substitutes can be of help to diabetics and individuals on a diet. The principal sweeteners comprise saccharine, aspartame, acesulfame K, sucralose, steviol glycosides (stevia extract) and polyols (sorbitol, mannitol, xylitol, etc.).

VITAMINS

These 13 micronutrients (vitamins A, D, E and K as well as the 8 vitamins in the B group and vitamin C) are "essential". Contrary to popular belief, they can be found in food from animal as well as plant sources. But no single food contains them all, which is the reason why it is important to eat a varied diet that does not exclude any food category. Vitamins contribute to a large number of vital functions and some of them play a recognised role in the decreased risk factors for certain diseases.

TO FIND OUT MORE ABOUT HEALTH INGREDIENTS

How are health ingredients used?

Health ingredients are used to enrich everyday consumer food products, in dietary supplements and in food aimed at populations with specific nutritional needs such as young children and pregnant women. These various types of finished products are in turn controlled by specific regulations to ensure further safety to consumers.

In the case of vitamins and minerals, European authorities define forms that can be used in food. They must be biodegradable, i.e. easily assimilated by the body. Yeast enriched with selenium is, for example, an authorised form of selenium. European authorities can also limit or ban the use of certain substances where necessary (Regulation 1925/2006).

Are health ingredients safe?

All marketed ingredients must be safe to human health, which is the first requirement. In addition, the authorities use several tools to guarantee safety, i.e. authorisations and conditions of use. All "novel food ingredients" must be authorised in accordance with Regulation (EU) 2015/2283 before they can be marketed in the European Union. A novel food ingredient can only be authorised when it is judged not to pose a risk to human health. It must also not mislead the consumer and, if replacing another ingredient, not be nutritionally disadvantageous.

How to communicate about health ingredients?

Facts on health ingredients are referred to as claims, which are strictly controlled by a European regulation (Regulation 1924/2006). Claims on food labels and in advertising must be based on evidence that is generally accepted by the scientific community. They must be used in compliance with the regulation and notably include a reference to the importance of a balanced diet and healthy lifestyle. Claims referring to the prevention or cure of diseases are strictly prohibited.

What claims are authorised?

There are two types of claims. Nutrition claims provide information on food content (e.g., rich in omega-3, source of fibre, etc.). Health claims describe the effect of ingredients on one of the body's functions (e.g., calcium is necessary to normal bone structure) or on the decrease of a disease risk factor (e.g., oat beta-glucan lowers cholesterol, a risk factor in the development of cardiovascular disease).

Claims involving children's health and development are also regulated. Since the end of 2012, communication on the health benefits of foodstuffs has undergone a major development, in compliance with European regulations.



Why is a pregnant woman's diet important?

Whilst it is a known fact that the diet of infants and young children is critical and must provide all the ingredients required for their growth, research shows the impact of the pregnant woman's nutrition on her child's health and even on the future adult. It is therefore important that the diet of the pregnant or nursing woman be adapted to cover the developing baby's needs in addition to her own needs. A varied and balanced diet is necessary but may not always be sufficient. Where necessary, specific dietary supplements can be recommended by the doctor (e.g. folates (vitamin B9), vitamin B12 for women who do not consume animal products, etc.).

DID YOU KNOW?

Hydrolysed collagen: a health ingredient dating back to the Middle Ages

In ancient times already, hydrolysed collagen, obtained from gelatine, was famous for its health benefits. Nearly 10 centuries ago, the scholarly abbess Saint Hildegard of Bingen who carried out research on animal tissue extracts, understood that the latter allowed rebuilding bone and cartilage cells and recommended calf's foot broth to relieve joint pain.

Eating yogurt: an old wives' tale debunked

Back in the day, our grandmothers and our family doctor recommended eating yogurt during antibiotic treatments. In fact, antibiotics destroy intestinal flora, which may lead to tummy aches. The cultures in yogurt represent a precious aid in restoring intestinal flora. Eating yogurt to restore one's intestinal flora, an old wives' tale that is still valid today.

Where does the word "vitamin" come from?

In 1890, Dr Eijkmann, doctor at the Java prison observed that the farmyard chickens exhibited the same disorders as the prisoners (difficulty walking, etc.). After the accidental distribution of unhulled rice to the chickens, he noticed that the disorders vanished. By amending the prisoners' intake, their health also improved. His colleague, Dr Grinjs inferred that there was an essential nutritional principle in the rice husk, able to cure these neurological disorders, subsequently described as beriberi. In 1911, by analysing an extract of the rice cuticle, Casimir Funk discovered an amine, thiamine (vitamin B1). He then gave it the name vitamin, an amine essential to life.



The Eskimos and the impact of omega-3 on heart health

Two researchers, Kromann and Green have compared Eskimo populations since the 1950s: one, living in the ice fields with a traditional lifestyle and the other, who left to settle in Denmark. They observed the low number of heart attacks among Eskimos in the ice fields. Later, Bang and Dyerberg would make the connection between the consumption of fish rich in omega-3 and cardiovascular health linked to lower blood triglyceride levels.

Chlorella, an updated microalga

Chlorella was discovered by the biologist Beijerinck at the end of the 19th century, following the development of the microscope. After World War II, chlorella was identified as an ingredient able to remedy malnutrition due to its wealth of nutrients. Its production started in Japan in 1955, which today is the first consumer country. Still not very well known in Europe, chlorella is becoming more widespread.

WHICH VITAMIN IS IT?

Q1 I contribute to the defence against certain infections and the assimilation of iron.

Q2 I am essential to blood coagulation.

Q3 I am an antioxidant and I protect cells against aging.

Q4 I contribute to the absorption of calcium (hence my name) and of phosphorus by the intestines or kidneys.

Q5 I contribute to good eye health.

Q6 I am essential to the satisfactory development of the embryo.

Q7 Anti-anaemic, I am necessary to the formation of red blood cells.

A1 Vitamin C (ascorbic acid), **A2** Vitamin K (phylloquinone), **A3** Vitamin E (tocopherols), **A4** Vitamin D (calciferol), **A5** Vitamin A (retinol), **A6** Vitamin B9 (folates), **A7** Vitamin B12 (cobalamin).

This brochure does not claim to cover all health ingredients. Nature is an unlimited source of inspiration and innovation. The producers of specialty food ingredients make their know-how available to the food industry to take up the challenge with respect to health and nutrition.

The health potentials of ingredients here described are for informative purpose only. The list of health claims made on food permitted in the European Union is available in the **EU Register of nutrition and health claims made on foods**.

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Edited by EU Specialty Food Ingredients, December 2018
Text courtesy of Synpa, les ingrédients alimentaires de spécialité.