FoodNews

Alsiano

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Reduce the sugar content of pickled products with Maltisorb®

Replace the sugar content of pickled products like pickled herrings and pickled cucumbers with Maltisorb® maltitol weight-for-weight without losing the sweet taste

By Mette Dinesen, Area Sales Manager, Alsiano A/S

WHO (World Health Organisation) recommends that healthier eating habits should include that less than 10 % of a persons energy needs is covered by simple sugars - i.e. sucrose. This clearly affects confectionery products, but foods like biscuits, ice-cream, dairy-based desserts and ready meals also tend to contain too much sugar.

We eat more and more sugar, but most of us are unaware of this, since much of the sugar is hidden in foods that do not appear to be particularly sweet. Industrial sugar is still relatively cheap and takes up much space in many of our daily foods such as cold cuts, bread and pickled products to mention a few examples.

Reduce the sugar without reducing the taste

Maltisorb® crystalline maltitol from Roquette is the number one sweetener for sugar-free quality products with nutritional benefits. Today, maltitol is already to a great extent used in food products for sugar reduction/sugar substitution, but so far it is mainly used in sugar-free confectionery and chocolate. There is, however, a multitude of other food products where maltitol can be used with advantage.

Trials at Alsiano have shown that Maltisorb® can replace sugar on weight-for-weight while maintaining the sweetaste and reducing the amount of carbohydrate significantly compared to traditional products. A glass of pickled herrings will typically contain 15-20 g sugar per 100 g, so replacing this content fully or partially with Maltisorb® will have a positive effect on the informative label of the product.

Sugar-free/sugar reduced pickled herrings and other pickled products such as beetroots, red cabbage, and pickled cucumbers are already on the supermarket shelves today, but common for these products are that artificial sweeteners have been used resulting in a considerably reduced sweetness. With Maltisorb®, on the contrary, it is possible to match the traditional pickled product in taste and sweetness.

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>> **The easy way to sugar reduction**
Maltisorb® is easy to use and requires no modification of the process used for conventional recipes. This combined with the weight-for-weight replacement of saccharose by Maltisorb® makes is very easy to test and later incorporate in the production.

About MALTISORB® maltitol
Maltisorb®, produced and marketed by Roquette, is a crystalline maltitol and a "bulking agent", which can be used in the production of sugar-free or sugar-reduced foods.

The characteristics of Maltisorb® are very similar to those of saccharose in regard to solubility, melting point, sweetness, taste, mouth-feel, etc. Maltisorb® can therefore easily replace saccharose in foods without any vital changes in either recipe or process.

Among polyols, Maltisorb® is a carbohydrate holding a special position. The way that it is digested by the organism – 30% is digested in the small intestine and 70% is fermented by bacterias in the large intestine - gives Maltisorb® maltitol remarkable nutritional benefits.

Polyols are known for a slow increase in GI (glycaemic index) due to the short time of digestion in the small intestine. Maltisorb® maltitol is in the category "very low glycaemic index". With a GI of approx. 29, Maltisorb®s impact on the blood sugar is thus minimal. Glucose and energy are gradually released over a longer period, and it is thus possible to control the body weight better and decrease the extent of snacking between meals.

- Low glycaemic index: 29
- Harmless for the teeth

Maltisorb® and nutrition claims

It is possible to use different nutrition claims on products containing Maltisorb® maltitol. The variations are a function of the finished product and the country in which it is distributed. Here are some examples of claims:

- No sugar
- No added sugar
- Low sugar content
- Reduced sugar content
- Reduced calorie content

- Can replace saccharose 1:1
- High solubility
- Low calorie value (2,4 Kcal/g)
- Organoleptic characteristics close to those of sucrose
- High resistance to heat and acid

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Turn new ideas into company assets

An increasing number of questions from our customers regarding patents led to participation in an introductory course on patents, trademarks and designs

By Tage Kusk, Area Sales Manager, Alsiano

Scandinavia has the highest innovative rating in the world: Denmark, Sweden and Finland are all in top 6 – together with Japan, Germany and Switzerland. Innovation leads to many questions both from our customers as well as internally in connection with our own business: *What about patents? Do we have the freedom to operate? Are we infringing other patents, trademarks or designs?* We therefore found it important to obtain a basic knowledge about patents.

"Turn new ideas into company assets". That was the title of an introductory course on "patents, trademarks and designs" held by Patent & Varemærkestyrelsen in Denmark (the Danish Patent and Trademark Office), which I attended together with 25 other participants.

4 crucial questions before you start
There are 4 quick, yet important, questions that you need to ask yourself in the pre-project period. They will hopefully start you up, if you are "cooking" on something internally in your company (who is not?):

- Where does the idea come from - is it really my own idea?
- Is the idea patentable to the best of my knowledge?
- Does it work (or is likely to do so)?
- Is it possible to commercialize the idea?

A demanding process
If you want to protect an invention, the safest way is to apply for a patent. Obtaining a patent is a lengthy and demanding process typically requiring 2-3 years or more where days and weeks are spent on meetings and discussions, and last but not least, it is also an expensive process which often costs more than 50,000 EUR for the start-up. But when you are through, you will have won exclusive rights to your particular idea or invention for 20 years!

All together, the introduction course took us through the various parts of the immaterial patent world such as defining what is a patent, what can and what can not be patented? When is an invention "new" and what are your legal rights based on a patent? In addition, the course went through the different patent categories (products, apparatus, process, application), national/ international patents organizations, and timelines and guidance for the applicant.

All in all, it was an interesting course, which we recommend others to attend. Patent & Varemærkestyrelsen offers various courses on a continuous basis – see www.dkpto.dk for more information.

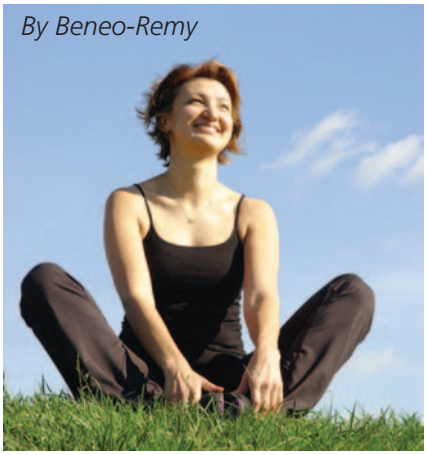
"Someday, someone will patent a process of writing patents"

This information is not intended as a substitute for professional legal counsel. Refer to legal references and consult an attorney for comprehensive guidance.

RemyLiVe® - one of the most nutritious ingredients in the world

Beneo-Remy is now extending its portfolio of rice specialities with one of the most nutritional food ingredients in the world: the stabilized rice bran RemyLiVe®. This ingredient contains the entire nutritional power of rice in condensed form - an ideal ingredient to fulfil the increasing demand for healthy whole grain foods

By Beneo-Remy



Beneo-Remy offers with its extended portfolio of natural rice derivatives a broad range of technological, sensorial and nutritional functionalities. RemyLiVe® provides the entire nutritional power of rice in a condensed form which can be used in a broad range of applications. RemyLiVe® is more than a fibre. It enriches food products with a well balanced source of essential nutrients, and it helps to up-grade your products to delicious whole grain foods or maybe even to functional foods.

RemyLiVe®

The most recent example of innovation at Beneo-Remy is the launch of a food-grade, stabilized rice bran. Rice bran accounts for 8-10 % of the rice kernel. When rice is harvested from the field, the kernel is fully enveloped by the rice hull. After drying, the hull is removed in the first stage of milling, yielding brown rice. In the second stage of milling, the outer brown layer is removed to produce white rice.The outer brown layer is composed of the rice germ (embryo) and several sub layers (Pericarp, Tegmen, Aleurone layer and part of outer endosperm layers). This 'outer layer' is then further stabilized and upgraded to result in RemyLiVe®.

A natural, well balanced source of many valuable nutritional macro- and micronutrients.

Rice bran contains about 50% complex carbohydrates made up of cellulose, hemicelluloses, starch and ß-glucan. RemyLiVe® is a good source of both soluble and insoluble dietary fibres - which are almost twice as abundant as in oat bran. Dietary fibres are supporting a regular and healthy function of the digestive system.

RemyLiVe® consists of about 14-16 % protein which is known for its excellent digestibility and hypoallergenicity. Compared to many other vegetable protein sources, rice bran protein contains more essential amino acids and has therefore a relatively high biological value. The amino acid composition of rice bran protein is very close to that of mother milk protein. As hypoallergenic protein source, RemyLiVe® fulfils all nutritional requirements needed for gluten-free food products.

The rice germ is completely incorporated in our new product. This means that over 20% of RemyLiVe® is composed of "good" fats, better known as rice oil. Rice bran oil is rich in monounsaturated and polyunsaturated fats. The unsaturated oleic acid (40-50 %) and linoleic acid (30 – 40 %) make up about 80 % of the total fatty acids. The high PUFA-content, together with the natural presence of fibres and significant levels of phytosterols such as sitosterol and camposterol, help keeping blood cholesterol levels under control.

An important source of natural anti-oxidants

Besides the typical rice gamma-oryzanol, RemyLiVe® also contains high levels of the vitamin E complex and ferulic acid. These and other compounds have the potential to reduce obesity and the risk of chronic disorders such as cardiovascular disease, cancer, etc.

RemyLiVe® also contains physiologically relevant levels of B-complex vitamins. The B vitamins contribute to the well-functioning of the nervous system and brain. Furthermore RemyLiVe® contains most of the essential minerals (magnesium, iron, manganese and zinc). The high nutritional value of RemyLiVe® is due to the richness of a large number of natural health promoting nutrients which seem to act together synergistically to exert a greater benefit than the individual components.

RemyLiVe®, a powerful ingredient for whole grain foods

RemyLiVe® offers all the essential components of whole grain. In the case of rice, the addition of about 12 % of RemyLiVe® to (white) rice flour is sufficient to reconstitute the whole grain composition of brown rice.

RemyLiVe® provides a slightly sweet, nutty flavour and can easily be incorporated in a number of food applications. Together with the upcoming trends of "whole ... *continues* >>

>> grain", "good carbs" and fibre enrichment, rice bran is gaining in popularity in a whole range of food applications such as nutrition bars, breakfast cereals, snacks and baked goods.

Beneo-Remy tested RemyLiVe® in several food applications. The enrichment of extruded snacks and cereals as well as healthy bread and even fine baked goods with 10–15 % RemyLiVe® is not linked with compromises on texture, colour and taste.

Applications

Breakfast cereals
RemyLiVe® is excellent for use in whole grain or multigrain breakfast cereals as the rheological behaviour is quite similar to regular flours or semolinas. Up to 10% incorporation, the expansion is the same as for regular rice crisps. Even at 20% incorporation the expansion of the cereals is acceptable. It is worth noting that RemyLiVe® also makes it possible to prolong the bowl life of the breakfast cereals. Texture analyses indeed showed a long-lasting crunch of the cereals after being soaked into milk.

Rice pasta
RemyLiVe® is an excellent source of fibres and micronutrients in gluten-free rice pasta. Trials showed that 10% incorporation has no significant effects on the cooking quality.

Bakery
Incorporation of RemyLiVe® in bread leads to a very nice crumb structure. Crust and crumb colours are a bit darker compared to a reference wheat bread which indicates the presence of nutritional whole grain cereals. Only from 10% incorporation on, the mean volume tends to be slightly lower while the softness of the bread remains exactly the same over time. The taste of the enriched bread is excellent, even at high levels of 15% RemyLiVe®.

In short dough cookies, RemyLiVe® also has an excellent performance. Doses of 10% (on flour basis) lead to very tasteful cookies which are very close to the reference.

RemyLiVe® can be used in lots of other whole grain bakery applications like crackers, cakes, bars, gingerbread, etc.

Other applications
RemyLiVe® can be used in other applications such as infant food (whole grain enriched infant cereals), prepared foods (batters and coatings), etc. RemyLiVe® provides a natural source of fibres, vitamins and minerals in significant amounts. The inclusion of about 10% RemyLiVe® in food products allows nutrient content claims such as "source of fibre", "source of vitamin B1 and B3" or "rich in magnesium".

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Energy metabolism of functional carbohydrates

The first European Beneo Scientific Symposium was held on 11 April in Brussels, where a a panel of international experts and scientists presented the latest findings on energy metabolism of functional carbohydrates

Obesity is increasingly viewed as a serious and growing public health problem since excessive body weight has shown to predispose to various diseases. On this basis, Beneo-Orafti held its first European Scientific Symposium, where the purpose was to give the attendees more insight on the impact of functional carbohydrates on energy metabolism.

Carbohydrates make up the major part of our daily diet. However, up to now, not much attention has been given to the diversity of their physiological effects, depending on the specific type of carbohydrate. The same is true for dietary fibres. The symposium thus took a closer look at the physiology of functional carbohydrates including prebiotic dietary fibres - particularly the benefits some of them have in energy metabolism.

Glycaemic response and prolonged energy release, sports nutrition, appetite and food intake regulation, and body weight management were some of the topics discussed at the symposium where a panel of international experts and scientists were brought together to provide reviews and present the latest findings. All panel members were working in the area of functional carbohydrates and prebiotics and their interaction with energy metabolism.

"It was a very interesting day", states Jette Faber, Sales Manager at Alsiano, who participated in the symposium in Brussels. *"There were many interesting discussions and preliminary results of several ongoing tests. It shall be interesting to see the final results of these tests and if they can confirm some of the hypotheses that were put forward at the symposium"*.

New alginate system for restructuring fish and poultry

Eurogum has developed a series of new alginate systems for fish and poultry applications. One of the new systems is EUROGEL® MBA 2274 which is well suited for restructuring fish and poultry trimmings

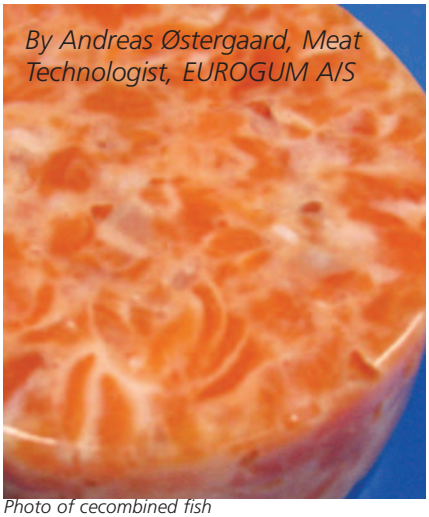

Photo of cecombined fish

Alginate has been used for meat applications for many years, and the sodium alginate types (E401) are used in many cold processed meat applications.

The unique cold gelling properties make alginate a very attractive ingredient for the fish and poultry processing industry. EUROGUM A/S has over the past year developed several new alginate systems for different meat applications and also specialized product types for cold processed fish and poultry applications.

Today, EUROGEL® Alginates are used worldwide by renowned meat and fish processing companies, using specialized alginate systems or standard alginate types, depending on the individual customer's needs.

Restructuring of fish or poultry trimmings with EUROGEL® MBA 2274

Poultry and fish trimmings can easily be turned into one regular piece of meat by using EUROGEL® MBA 2274. It is also possible to shape the poultry or fish pieces into all kinds of things like e.g. cartoon characters and animal shapes for kids foods. Other applications are nuggets or burgers - and for fish also fish sticks and fat emulsions.

Simple process

It is quite easy to restructure poultry or fish trimmings with EUROGEL® MBA 2274 – see recipe below. Fish trimmings and water are added into a mixer and mixed for 30 seconds. EUROGEL® MBA 2274 is then equally spread over the meat and mixed for 2 minutes. The sides of the mixing bowl are scraped down, and all is then mixed for another 2 minutes to ensure a homogeneous mix. The finished mix is left cold overnight and is then ready for shaping and further processing.

Other alginate systems

EUROGEL® alginates come as two systems:

- Self Gelling Agent - a combination system containing a calcium source.
- Viscosity Agent - a combination system not containing a calcium source.

Because alginates are reacting on different ions from salt and phosphate, it is important to keep a clean process, without any contamination of salts and phosphates from previous productions. Such contamination could influence the alginate reaction and give an unwanted or no reaction at all.

Among other alginate systems developed by EUROGUM A/S is EUROGEL® MBA 2135 and EUROGEL® MBA 2147 – the latter is a combined carrageenan and alginate system. EUROGEL® MBA 2135 is well suited for cold processed emulsions. It makes a cold gelling, heat stable emulsion and is used for fat and meat applications. It can also be used for emulsions in general.

EUROGEL® MBA 2147 can be used in meat balls for fresh emulsions used for home cooking and in pâtés. It stabilizes the emulsion, improving appearance and shelf-life. EUROGEL® MBA 2147 can also be used in fresh sausages for stabilization.

Technical support

Besides the mentioned alginate systems, EUROGUM A/S develops tailormade EUROGEL® alginates for applications for the poultry and fish industries. Together with Alsiano, EUROGUM A/S can provide technical service, samples, recipe suggestions or make a joint seminar in Denmark to show the possibilities for poultry and fish processing with EUROGEL® alginates.

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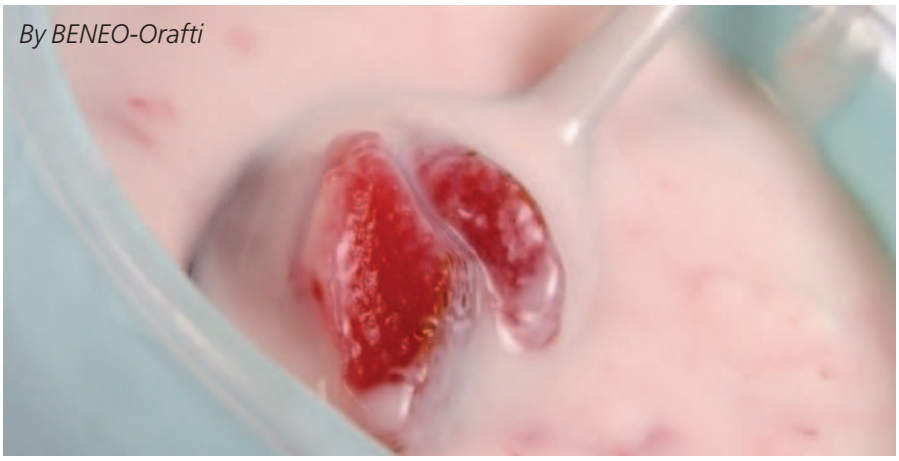
Poultry/fish alginate system – restructuring of trimmings

Ingredients	%	kg
Poultry/fish trimmings	89	445
Water	10	50
EUROGEL® MBA 2274	1	5
Total	100	500

New highly soluble inulin with almost no mono- and disaccharides

BENEO-Orafti launches Orafti®HSI Ultra, a highly soluble inulin that contains less than 4% mono- and disaccharides. The perfect choice for applications for which low sugars content and inulin solubility are crucial



By BENEO-Orafti

BENEO-Orafti®HSI is a revolutionary new type of inulin that combines the best of inulin and oligofructose. Being a well-controlled composition of short chain inulin molecules, HSI couples the texture-enhancing benefits of inulin with the ease of use of oligofructose. Orafti®HSI is cost effective, user-friendly, and comes in powder format, making it easy to add to formulations.

Orafti®HSI Ultra

BENEO-Orafti has now launched an upgrade from the regular Orafti®HSI product. Besides the lower sugars content, it has the same properties and advantages. HSI Ultra is a 'Low Sugars Highly Soluble Inulin'. Whereas the 'regular' HSI contains less than 14% mono- and disaccharides (glucose + fructose + sucrose), HSI Ultra contains even less than 4%. Orafti®HSI Ultra is therefore suitable for customers for whom low sugars content is critical, and inulin solubility is a key factor. It can be perfectly used in fruit preparations as well as fruit fillings for baked goods and confectionery. It can also be applied in sugar-free chocolate because Orafti®HSI Ultra in combination with a polyol provides an optimised mouthfeel.

Adding Orafti®HSI family products means adding value

By adding products from the Orafti®HSI family to e.g. fruit preparations, food developers can profit by the combined benefits of inulin and oligofructose:

- **Ease of use of oligofructose**: while conventional inulin is just 10% soluble at room temperature, Orafti®HSI products are 20-25% soluble, making it easier to incorporate them into formulations.
- **Texturising properties of inulin**: Orafti®HSI products deliver an excellent mouthfeel and creaminess to low-fat dairy products and can easily be incorporated through the fruit preparations.
- **Sensorial properties of oligofructose:** Orafti®HSI can be used as a sugar substitute when combined with high intensity sweeteners or with nutritive sweeteners. These combinations result in reduced sugar or no added sugar products with a sweetness profile similar to sugar. Oligofructose does indeed greatly reduce the typical acid after-taste of intensive sweet eners.
- **Superior stability:** Orafti®HSI products are more acid stable than oligofructose. Secondly, due to their improved stability and solubility, higher inclusion levels are possible in fruit preparations avoiding any risk of crystallisation compared with standard inulin.

Give your products the FeelGood Factor

Orafti®HSI products are ideally suited for fruit preparations for low-fat dairy products. By replacing part of the sugar or fat content with Orafti®HSI products, manufacturers can develop guilt-free foods with added nutritional benefits – without compromising on consumer appeal - and give their products the FeelGood Factor.

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	Inulin*	Glucose* Fructose* Sucrose*	Average DP	
Orafti®GR	+/- 92%	+/- 8%	10	Standard
Orafti®HSI	+/- 86%	+/- 14%	<10	Highly soluble
Orafti® HSI Ultra	+/- 96%	+/- 4%	<10	Low sugar highly soluble

*Values expressed on dry matter

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Nutriose, a low-GR soluble fibre with an outstanding tolerance factor

WHO/FAO recommends a daily intake of fibre of about 30 g/d/person. NUTRIOSE® 06 can be a very useful way to help achieve this goal. Further to this, NUTRIOSE® 06 offers an outstanding digestive tolerance factor, allowing its consumption in the amounts best suited to achieving the desired beneficial changes in the gut eco-system

By Dr Catherine Lefranc-Millot, Roquette group

The WHO/FAO currently recommends that the well-balanced diet required helping controlling the global epidemic in obesity should include:

- A balanced calorie intake (carbohydrates, lipids, proteins)
- Foods that release their energy slowly *(i.e. about 10% total calories from quickly digested sugars (mono and disaccharides); and about 40% from complex sugars, such as fibre)*

The recommended daily intake of fibre is about 30 g/d/person. Roquette's NUTRIOSE® 06 (part of the NUTRIOSE® range) is a resistant dextrin derived from wheat or maize. It is mostly resistant to digestion in the small intestine and largely fermented in the colon.

According to a definition of Roberfroid[1], it is therefore a soluble dietary fibre that can be entered into the composition of a foodstuff with up to 20–25%. As such, NUTRIOSE® 06 can be a very useful way to help achieve the nutritional goals of WHO/FAO.

Sourced from starch, NUTRIOSE® is a soluble dextrini with high dietary fibre content

Roquette produces NUTRIOSE® from wheat or maize starch using a highly controlled process of dextrinisation, followed by a chromatographic fractionation step. The chromatographic step decreases the poly-dispersity of molecular weight distribution. This process ensures high fibre content and the molecular weight distribution necessary for the desired biological and rheological behaviour of the product. Further purification and spray drying steps follow the chromatographic partitioning. Molecular weight distribution and botanical origin result in different types of NUTRIOSE® products: NUTRIOSE® 06 (FB from wheat or FM from maize) and NUTRIOSE® 10 (FB or FM). The weight-average molecular weight (Mw) and the number average molecular weight (Mn) are respectively nearly 5000 and 2800 g/mole for NUTRIOSE® 06, and 3800 and 1100 g/mole for NUTRIOSE® 10.

During the dextrinisation step, hydrolysis and repolymerisation occur. Repolymerisation creates new glycosidic bonds in addition to the typical starch α-1,4 and α-1,6 linkages. These include both linear and branched non-digestible linkages, e.g., linear and/or branched α-1,6 and/or ß-1,6; α-1,2 and/or ß-1,2; ß-1,4; α-1,3 and/or ß-1,3. Mass spectrometry is used following methylation of NUTRIOSE® to determine the bond distribution.

No difference in distribution is evident between NUTRIOSE® whether made from a wheat or from a maize starch base. Some linkages are known not to be hydrolyzed by human digestive enzymes but when in greater abundance, such linkages – as in NUTRIOSE® – can also protect the residual α-1,4 bonds and α-1,6 bonds against enzymatic hydrolysis. Whereas typical bonds in starch provide for a total fibre content of virtually zero, some resistant starches offer a high fibre content (up to 70 % according to the AOAC 2001-03 method), for example through their crystalline structure. In the dextrin NUTRIOSE®, the large number of "non-digestible bonds", together with the effect described above, provides a total fibre content of nearly 85% for NUTRIOSE® 06 and nearly 70% for NUTRIOSE® 10, two products in the NUTRIOSE® range. Moreover, the residual mono- and disaccharides content of NUTRIOSE® 06 is below 0.5% dry substance and may thus be considered sugar-free. Due to its lower molecular weight, a higher proportion of mono- and disaccharides is present in NUTRIOSE® 10 – approximately 10% to 12% dry substance.

NUTRIOSE® is a low digestible carbohydrate, outstandingly tolerated and inducing a low glycaemic response

According to some prediction equations (2, 3), the calculated net energy value of NUTRIOSE® 06 is on average 2.1 kcal/g dry basis. According to the FASEB equations (the most well-known among all the available equations for net energy value determination for carbo-hydrates), the calculated net energy value is about 1.7 kcal/g commercial basis (4). This is the value commonly used in Europe for finished products ... *continues* >>

>> formulation. Vermorel *et al.* (5) reported that only 15% of the low digested carbohydrate is enzymatically digested. Unlike standard starch, and being a resistant one, NUTRIOSE® 06 is weakly digested in the small intestine (15% of the ingested dose) and largely (75%) fermented in the colon (6). As a low digested carbohydrate, NUTRIOSE® therefore induces low glycaemic and insulinaemic responses (GR = 25 and IR = 13 for NUTRIOSE® 06) and allows the production of foodstuffs inducing glycaemic responses that are attenuated and spread out over time (7). For example, NUTRIOSE® 06 can easily be incorporated in drinks. When consumed after dilution in a glass of water, concentrated fruit drinks intended for dilution and formulated with NUTRIOSE® (syrups) elicit a glucose response of 10% compared to a similar standard commercial product consumed in the same way. The benefits brought to foodstuffs where it is incorporated may therefore include the delay of hunger sensations and the prolonging of energy release, as well as beneficial follow-on health effects – through volatile fatty acid production during colonic fermentation (8) – on colonocytes in the digestive epithelium. These fermentations increase the beneficial glucidolytic flora and decrease the colonic pH, thus contributing to a decrease of potentially pathogenic flora. When ingested in amounts sufficient to induce the claimed nutritional benefit, some types of fibre product may also create digestion problems and poor tolerance levels in the gut, which may limit their use. Like resistant starches, NUTRIOSE® is outstandingly tolerated, with a threshold set at a mean level of 45g/day and no diarrhoea occuring, even with doses of 100 g/d (5; 9; 10) (the mean laxative threshold has been estimated at over 100 g/d).

Table: Some characteristics of Nutriose® stability in food processing

Cookies: Cooking at 200C for 10 min.	**Boiled candies:** Open pan cooking at 180 C	**UHT products:** Sterilisation at 140 C for 2 sec.
Drinks: Pasteurisation at 74 C for 17 min.	**Fruit preparations:** Pasteurisation at 95 C for 5 min.	**Soups:** Sterilisation at 110 C for 50 min.

Nutriose® - very stable in food processes

NUTRIOSE® has a neutral taste, low hygroscopicity and very low sweetness; it is also completely soluble and induces only low viscosity change when incorporated in beverages. Unlike resistant starch, it can be easily incorporated in liquid products in which a powder texture should not be detectable. Thanks to its neutral organoleptic characteristics, NUTRIOSE® does not alter the taste of foodstuffs with which it is prepared. Unlike some resistant starches, whose fibre content may decrease after heat treatment due to the sensitivity of the crystalline structure to temperature, NUTRIOSE® is resistant to heat treatment (for examples, see table), is stable across a wide pH range and maintains fibre content throughout its shelf-life. In addition to its outstanding nutritional properties, it is therefore very easy to use and incorporate in foodstuffs, retaining its nutritional benefits throughout the food process.

Conclusion

With its low glycaemic response and prolonged energy supply, gut health benefits and high tolerance factor, the dextrin NUTRIOSE® is a fibre that behaves like a resistant starch. Moreover, it withstands heat and acid food treatments, is soluble in liquids and generates only low viscosity. From a nutritional point of view and against a background of a global obesity epidemic, the NUTRIOSE® range therefore offers a very interesting set of characteristics while being technologically easy to use.

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