ECO AGRI REPRESENTS BURAPA PROSPER ON RICE STARCH

The Eco Agri team is happy to announce that it has extended its portfolio of starches and flours with the rice starches of Burapa Prosper. Available products are Native rice starch and Waxy rice starch, both available as conventional and organic.

Rice and rice starches

Rice is a major food staple, being one of the most abundant crops produced worldwide with world paddy rice production projected to reach 748.0 million tonnes (496.7 million tonnes, milled basis) in 2016.

The broad range of rice varieties around the world, ranging from aromatic varieties like Jasmin and Basmati, over non-fragrant Japonica and Indica, gives rise to a wide variety of rice dishes.

However, aside of direct consumption, rice is also further milled into (brown) rice flour, or its components like starch and protein are extracted and used as natural ingredients in food products like baked goods, soups and sauces, dairy products, infant food, etc.

Natural and recognizable

Naturalness and transparency are key for today's consumers, who are increasingly concerned about what goes into their food, as well as how it is made. Figures do show that in 2016, almost every third product launch carries a clean label claim of some sort in Europe.2

Rice has already been long time part of people's daily diet, and it makes rice ingredients scoring very high on the consumer's list of familiarity and naturalness when it comes to food ingredients. It makes rice starch very popular when developing and launching new food products claiming "all natural", "organic", "gluten-free", "non-GMO", … and as such deserves its shelf space.

The uniqueness of rice starch

Unlike other food starches commonly used in the food industry, rice starch is unique in its starch granule size and molecular structure of both its amylose and amylopectin (Table 1).

	rice starch	wheat starch	corn starch	tapioca starch	potato starch
size (µm)	2-8	3-40	15-25	20-35	15-80
shape	polygonal	oval	hexagonal	hexagonal (truncated)	oval
color	very white	greyish white	yellowish white	greyish white	white
taste	neutral	cereal taste	protein taste	light off-taste	potato taste
gel structure	soft and creamy	firm	firm	sticky	sticky

The unique structure of rice amylopectin gives rice starch exceptional shelf-life stability, and the branched rice amylose and small starch granule size make rice starch an ideal starch when it comes to creating soft and creamy textures. Due to its structural characteristics, rice starch also belongs to the group of highly digestible starches, making it a popular ingredient in infant food products.

Soft gel structures with “melt-in-mouth” properties

Linear amylose easily leaches out of the starch granule upon heating and re-aligns very easily in the continuous water phase upon cooling to form hard gels like wheat starch and corn starch do. Rice amylose however, being branched, stays to a higher extent within the starch granule structure during heating. On top, the amylose which leaches out of the starch granule into the surrounding water phase, remains more unstructured upon cooling, due to steric hindrance of the branches. This results in the formation of a soft gel, which is easily broken down upon mastication, creating a “melt-in-mouth” perception. It explains why rice starch has its popularity as gelatin replacer in for example dairy desserts, forming cuttable gels with a creamy texture upon eating.

Fat mimetic

Many European consumers are looking for fat and sugar reduced products, yet few prepared to sacrifice taste and texture, manufacturers are increasingly facing the challenge of finding ingredients that deliver the desired texture and great taste. The granule sizes of rice starch range from 2 to 8 and thus have the same order of magnitude as fat droplets commonly present in oil/water (O/W) food emulsion systems. This is why rice starch has a high potential to create smooth creamy textures in fat-reduced products.

Whitening, smoothening agent

On top, the small granule size in combination with its neutral taste and white colour, makes rice starch very popular as whitening and smoothening agent in confectionery coatings of chocolate lentils, liquorice and chewing gum, and bakery icings and fillings. A natural ingredient able to replace titanium dioxide, being a commonly used additive in the food industry but more and more in the spotlight due to health concerns raised related to its link with nanomaterials.

Shelf-life and freeze-thaw stability

The mid-sized C chains of amylopectin are linked to retrogradation, re-alignment of polysaccharide chains, reducing the water binding capacity and expelling water from the starch granule. The result being instability during freeze-thaw cycles, or after prolonged storage of the starch paste or gel. The low presence of these mid-sized end standing branches in rice amylopectin gives rise to a superior stability of rice starch compared to other food starches from other botanical sources. It makes rice starch the first choice in food categories like infant jars, fruit preparations, frozen meals… where improving shelf-life and freeze-thaw stability with natural ingredients is of key importance.

For more information and samples

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