

Business *Awareness*

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Larch arabinogalactan – significant benefits for nutrition and personal care applications

It has been found to offer many significant benefits, the most important ones being in the field of immune enhancement and digestive health. These are the characteristics of larch arabinogalactan (LAG), an ingredient for food and dietary supplements in both human and animal nutrition but also for personal care products such as creams and lotions. LAG is one of Lonza's newer products in the nutrition area. It took however some time until it found its way to Lonza.

LAG is an all-natural, multifunctional product from the wood of larch trees that grow in abundance in the USA and was first discovered by scientists working in the paper industry. Historically, larch trees were rejected by lumber companies because they were too soft for construction and too full of sticky sugar for paper milling. In the 1960s, St. Regis Paper in Montana found a

way to soak the sugar out of larch timber, making the wood suitable for paper pulp. The extracted sugar was further refined into a naturally occurring, water soluble polysaccharide which they called arabinogalactan. St. Regis recognized that arabinogalactan has commercial value and built a small pilot plant for procession. In 1993, economic constraints caused the company to abandon the idea before the market was developed.

In 1996, Larex Inc., a small Minnesota-based company constructed a manufacturing facility for LAG in Cohasset. Lonza acquired the LAG business from Larex Inc. in 2006 and that's how the Cohasset site, which is located in the head waters of the Mississippi River, came to Lonza. The facility is manufacturing several grades of LAG which are utilized in different markets and sold under the following trade names.

Life Science Ingredients	Custom Manufacturing: Exclusive Synthesis & Biopharmaceuticals		Bioscience
Nutrition Ingredients	Small Molecules	Mammalian Operations	Rapid Testing
Microbial Control	Peptides	Biopharma R&D Services	Cell Discovery
Performance Intermediates	Biochemicals	Microbial Operations	Molecular Biology
			Media
			Cell Therapy



Successful in many markets

FiberAid™ is an all-natural, multifunctional prebiotic dietary fiber with a beneficial impact on the gastrointestinal system and high digestive tolerance. FiberAid™ is a slow fermenting prebiotic that selectively increases beneficial microflora such as lactobacilli and bifidobacteria while decreasing endogenous pathogenic bacteria. FiberAid™ is available as a dietary supplement in capsules and sachets, and due to its added processing features such as dough handling, moisture retention, and shelf life extension it can be easily formulated into foods and beverage systems.

ResistAid™ is an immune system optimizer that supports the body's natural defenses by enhancing the number and activity of several immune system cells such as macrophages, lymphocytes and granulated cells making the system more responsive to daily challenges. As part of a healthy diet, ResistAid™ helps support healthy immune function and has antioxidant capacity. As consumers become more aware of the link between diet and immune function, they seek natural ingredients to further support their diet. At this point the major applica-

tions are in capsules/tablets and powder blends, but due to the many functional benefits can be incorporated into a wide variety of functional foods (drink & nutritional bars)

LaraFeed™ is a natural ingredient that can be used as a nutritional animal supplement, a formulated feed component or compounded with essential vitamins and minerals.

LareCare™ A200 is a natural, mild, non-irritating polysaccharide which reduces system viscosity, enhances emulsion stability, provides moisture control, forms films, improves spreadability and delivers enriched skin feel to a variety of personal care lotions-creams and hair-care products.

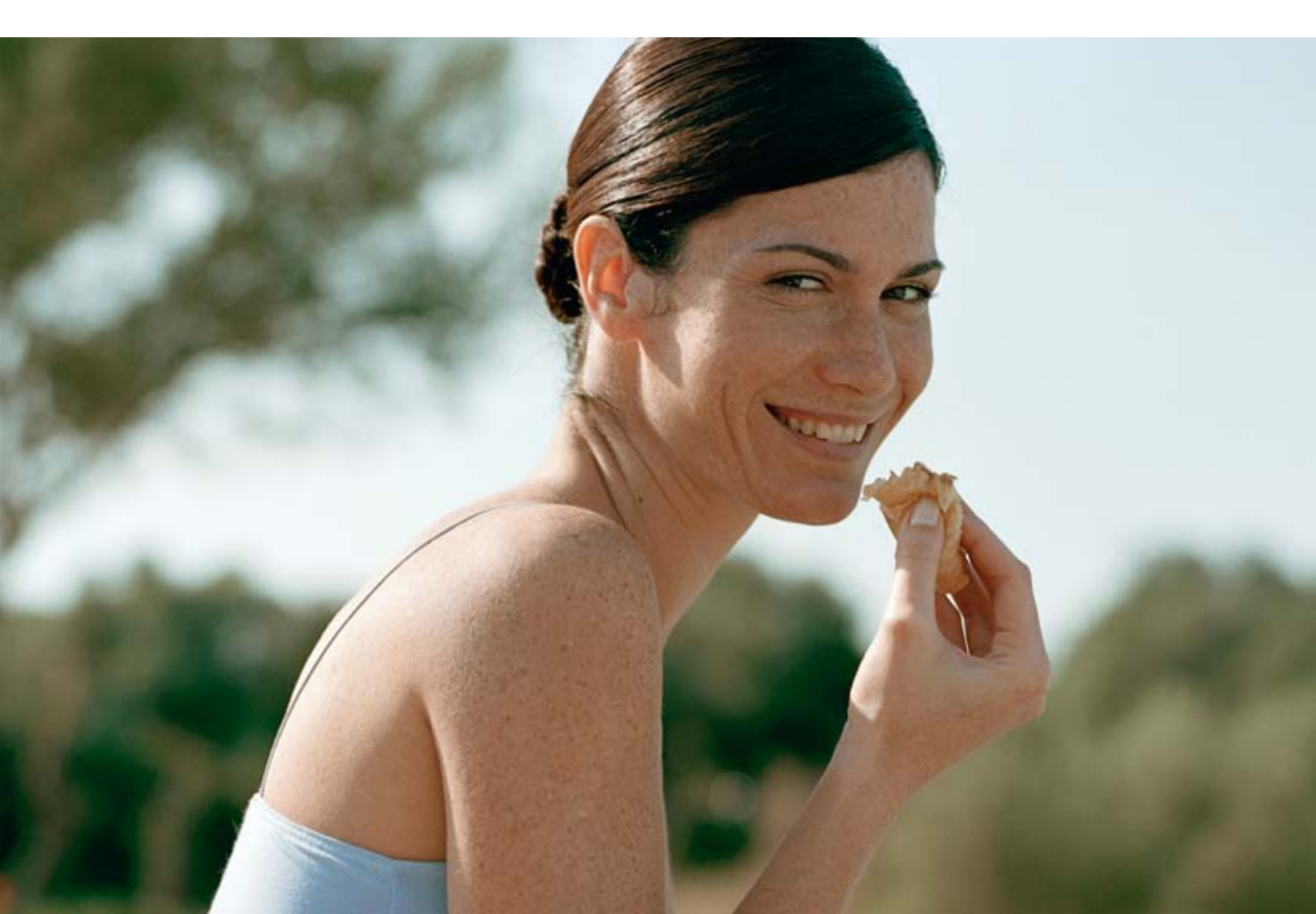
A focus on quality and safety

Lonza's LAG products are manufactured by steam-heating of larch wood chips and evaporation of the extract. This procedure is unique as it does not need any harsh

chemicals to release the polysaccharide from the plant matrix, and therefore the product remains pure and structurally unaltered.

The patented, water-based, extraction process is free of solvents. Lonza makes complete use of the trees: any remaining by-products are sold as fiber matting and for particle board production. LAG is approved by the US Food and Drug Administration (FDA) as a direct food additive. It is affirmed GRAS (Generally Recognized as Safe) and meets pre-DSHEA (Dietary Supplement Health and Education Act) requirements. Regulatory approvals are being sought outside the USA to prepare for future launches around the world, in 2008 Lonza successfully gained approval by the Therapeutic Goods Administration (TGA) for use in Australia.

With these prerequisites LAG is a good match to Lonza's Nutrition Ingredients business unit which is constantly rejuvenating its product offering in order to best meet customers' needs.



Lonza