

Decades of research yield natural dairy thickener with probiotic potential

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A new type of food thickener may add probiotic characteristics to the products in which it's used. Credit: Oregon State University

Microbiologists at Oregon State University have discovered and helped patent and commercialize a new type of dairy or food thickener, which

may add probiotic characteristics to the products in which it's used.

The thickener is now in commercial use, and OSU officials say it may have a significant impact in major industries. The [global market](#) for polymers such as this approaches \$7 billion, and there are estimates the U.S. spends up to \$120 billion a year on probiotic products such as yogurt, sour cream and buttermilk.

The new product is produced by a natural bacterium that was isolated in Oregon. It's the result of decades of research, beginning in the early 1990s when a novel polymer with an ability to rapidly thicken [milk](#) was discovered by an OSU microbiologist. The polymer is known as Ropy 352 and produced by a non-disease-causing bacterium.

'This is one of many naturally occurring, non-disease-causing bacterial strains my research program isolated and studied for years,' said Janine Trempey, an OSU microbiologist. 'We discovered that this bacterium had a brand-new, never-before reported grouping of genes that code for a unique polymer that naturally thickens milk. In basic research, we've also broadened our understanding of how and why non-disease-causing bacteria produce polymers.'

This polymer appears to give fermented foods a smooth, thick, creamy property, and may initially find uses in sour cream, yogurt, kefir, buttermilk, cream cheese and artisan soft cheeses. Composed of natural compounds, it offers a slightly sweet property and may improve the sensory characteristics of low-fat or no-fat foods. And unlike other polymers that are now commonly used as thickeners, it may add probiotic characteristics to foods, with associated health benefits.

'There are actually very few new, non-disease-causing bacterial strains that produce unique polymers with characteristics desirable and safe for food products,' Trempey said. 'In the case of a dairy thickener, for

instance, a bacterium such as Ropy 352 ferments the sugar in the milk and produces a substance that changes the milk's properties.'

These are chemical processes driven by naturally occurring bacteria that do not cause disease in humans, Trempy said, but instead may contribute to human health through their probiotic potential.

One of the most common polymers, xanthum gum, has been in use since 1969 and is found in a huge range of [food products](#), from canned foods to ice cream, pharmaceuticals and beauty products. Xanthum gum is 'generally recognized as safe' by the FDA, but is derived from a [bacterium](#) known to be a plant pathogen and suspected of causing digestive distress or being 'pyrogenic,' or fever-inducing.

Trempy's research program has determined the new polymer will thicken whole and non-fat milk, lactose-free milk, coconut milk, rice milk, and other products designed for use in either dieting or gaining weight. Beyond that, the polymer may have a wide range of applications such as thickening of pharmaceuticals, nutraceuticals, fruit juices, cosmetics and [personal care products](#).

In their broader uses, microbial polymers are used for food production, chemical production, detergents, cosmetics, paints, pesticides, fertilizers, film formers, lubricants, explosives, pharmaceutical production and waste treatment.

OSU recently agreed to a non-exclusive license for the patented Ropy 352 technology to a global market leader for dairy starter cultures. It's also available for further licensing through OSU's Office of Commercialization and Corporate Development.

Provided by Oregon State University

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