



DAIRY INGREDIENTS FAX

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Live Active Cultures: Beyond Yogurt

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“Live Active Cultures” are an integral part of yogurt. Although health conscious consumers learned to associate “live active cultures” with digestive tract health years ago, it has only been in the last decade that scientists have begun to understand how these live cultures, also called probiotics, may contribute to human health (see table). Can powdered products share in the benefits of probiotics?

Most experts agree that an important quality of probiotic-containing products is that they support the survival of the probiotic – throughout shelflife. In a dried form, probiotics can be quite stable, but certain conditions are important. Low water activity and temperatures at or below refrigeration temperature generally encourage survival. Also, certain protective agents such as sugars, sugar alcohol’s, milk , starch, maltodextrin and anti-oxidants, as well as packaging under nitrogen, can enhance the ability of the probiotic to survive.

But as the market expands for these products, the challenge of how to make these bacteria survive under less-than-ideal circumstances has become important to product innovators. Such stability is the focus of much industry research, as companies who sell probiotic strains strive to respond to the needs of those looking to use their strains in new ways. Dr. Lars Petersen², scientific director for the Danisco-Cultor (Milwaukee, WI) culture and probiotics program states, “In general, today label claims are met by adding a significant overage to products kept at room temperature. New technology is being looked at and could be based on protecting the probiotics from the environment and/or selecting strains that by nature survive better. When the stability issue is solved or improved many more mainstream products will contain probiotics as the interest is strong from infant formula, special nutrition, cereal manufacturers and others.”

Some dried, dairy-based, probiotic products have also hit the market. Nestle now sells probiotic-containing dried formula in Europe targeted for babies above 6 months of age (see insert). This product contains a formulation modeled after research by Saavedra, et al.³ who found that a formula with *Streptococcus thermophilus* and *Bifidobacterium bifidum* decreased the incidence of diarrhea in hospitalized infants. Other dried products are soon to follow, with flavored milk mixes, nutrition bars, breakfast cereals, and possibly even pet food, comprising likely targets.

At Cal Poly, probiotics have become a focus of research with Drs. Jimenez, Kitts, and Cano collaborating with adjunct visiting Research Professor Dr. Sanders. Dr. Sanders is currently evaluating the effect of different dried milk powder fractions on stability of different probiotic strains in yogurt. Results on this project should be available at year-end. For a comprehensive review on probiotics, see Sanders, Food Technology, 1999, 53(11):66-77 or full text at www.ift.org/navigate/index.shtml.



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³ Saavedra, et al. 1994. Feeding of *Bifidobacterium bifidum* and *Streptococcus thermophilus* to infants in hospital for prevention of diarrhea and shedding of rotavirus. The Lancet 344:1046-1049.

dependent on strain and levels of viable bacteria consumed.

Aid in lactose digestion
Resistance to enteric pathogens
Anti colon cancer effect
Immune system modulation
Allergy
Urogenital infections
Infection caused by helicobacter pylori