Preservation of Probiotic Bacteria in Various Food Products

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Objective: When fortifying foods with probiotic bacteria it's necessary to maintain the cell's viability throughout the product's shelf-life. This work describes the survival of stabilized probiotics in many food types with varying moisture content.

Materials and Methods: Using the Protect&Deliver™ encapsulation technology (ABN, Columbia, Maryland, US) probiotic bacteria were stabilized and dried by evaporation, or lyophilized with common cryoprotectants, and added to infant formula (Aw=0.20), nut butter spread (Aw=0.25), acidic drink mix (Aw=0.27), fiber supplement (Aw=0.20), breakfast cereal (Aw=0.40) and muesli bars (Aw=0.34). The probiotic enriched foods where stored for extended periods of time and analyzed by microbial plating to monitor the cell's long-term viability.

Results and Conclusions: Stability trials with infant formula, nut butter spread, acidic drink mix, and breakfast cereal showed the encapsulated probiotics losing an average of 0.90±0.55log CFU/g after 12-18 months in storage, while the controls averaged 3.59±1.79log CFU/g losses in 5 months. The fiber supplement trial ran for 17 months with the encapsulate losing 0.03 log/g, and the control losing 1.64 log/g. Testing in muesli bars showed the encapsulate losing only 0.84 log/g after 6 months, while the control lost 3.96 log/g in 2 months.

Using ABN's stabilization technology, probiotics can be provided in a broad array of food products, creating new opportunities while significantly reducing the need for over formulation.