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## Stabilization of probiotic bacteria using a novel microencapsulation system especially designed for infant formula (IF)

Powdered infant formula (PIF) is not a sterile product as the guidelines by the FAO/WHO point out. The presence of pathogens can present a challenge to young infants, consequently while preparing PIF extra precautions need to be taken. PIF is currently prepared at room temperature and thus the activity of pathogenic bacteria is maintained. According to WHO guidelines, PIF should be prepared at 70°C in order to destroy any contaminant which may exist in PIF. However, at this temperature, probiotic bacteria which may be contained in PIF may also be destroyed thus the advantages of probiotics will not be manifested.

PolyCaps has developed a unique microencapsulation technology which protects probiotic bacteria (PB) against hot water (70°C) during reconstitution of PIF in accordance with the new WHO guidelines. Harmful pathogens will of course be destroyed or disactivated. The microcapsules are designed to dissolve immediately after cooling the liquid to feeding temperature releasing the alive PB. Additionally, the microencapsulation system ensures a low water activity (aw) and protects the PB which allows a high viability and an extended shelf life.

The microencapsulation system consists of an inner core containing PB and other ingredients, which is further surrounded by a unique 2-layer coating comprising at least one smart polymer. The latter forms a solid gel when heated, thereby preventing the transition of heat and water to the PB in the core. However, the solid gel layer dissolves after cooling to feeding temperature, allowing live PB to be released in the liquid.

### Biography

Adel Penhasi, whose expertise spans the fields of polymer science and biomaterials, is currently Chief Science and Technology Officer of PolyCaps. Previously, he served as Vice President Innovative Research and Development at Dexcel Pharma where he managed the innovative research group for more than a decade. Adel Penhasi has published over 50 scientific papers, and he is the inventor of more than 55 patents and patent applications in different industrial applications such as drug delivery systems, medical devices and micro-encapsulations. He is a senior lecturer at The Azrieli College of Engineering Jerusalem - Pharmaceutical Engineering. He earned his PhD in Applied Chemistry from Hebrew University of Jerusalem.

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