

Encapsulation of *Pediococcus pentosaceus* OZF, A Promising Probiotic Bacterium

Harun Onlu^{2*}, Fadime Kiran¹, Mohamed Mokrani¹ and Ozlem Osmanagaoglu¹

¹Ankara University, Department of Biology, Turkey

²Muş Alparslan University, Department of Molecular Biology and Genetics, Turkey

In this study, a promising probiotic bacterium *Pediococcus pentosaceus* OZF, isolated from human breastmilk in our previous studies was encapsulated with calcium alginate (2%) and whey (5%) proteins, followed by lyophilization. Surface morphologies of the prepared microcapsules were analyzed under scanning electron microscope. Alginate capsules containing OZF cells were coated with whey proteins and were found to be stable at 4°C for 6 months without loss of any viability, and encapsulated OZF was found to be viable in simulated gastric and intestinal juice conditions such as pH, bile salts, pepsin and pancreatin. Transit of capsulated and noncapsulated OZF through gastrointestinal system (GIS), their adhesions as well as their effects on faecal microbiota variations were analyzed on murine model (Balb/C mice) by microbiological counts, qPCR and DGGE, respectively. OZF strain was detected in faecal samples of animal followed by 6 hours after feeding, reached the highest value in 10th hours and started to decrease after and lost completely at 24 hr. At 24 hours following the 15th day of feeding, the number of bacteria adhered to the intestine was determined. At the beginning of the trial, 8 log cfu was applied per animal and 2 log was found in the group feed with nonencapsulated OZF, which means there was 6 log decrease in the adhesion of OZF to GIS at 24 hr. Adhesion properties of encapsulated strain was also found to be the same (2.5 log, $p > 0.05$). As far as the faecal microbial composition on the general microbiota is concerned in terms of dominant groups such as Bifidobacteria, *Lactobacillus*, *E. coli* and Bacteroides, no significant differences were recorded between control and experimental groups.

Biography:

Harun Onlu is graduated from the Biology department of Yuzuncu Yil University and he completed his master degree in the same university. Later, he was started his PhD in Biology Department of Ankara University in 2011 under the supervision of Prof. Dr. Ozlem Osmangaoglu. During the years between 2011-2016, he worked as a research assistant in this department. While he was doing his PhD, he went to Belgium as a researcher in the University catholique de Louvain, Institute of life science Pascal Hols group by getting scholarship from the Scientific and Technological Research Council of Turkey (TUBITAK) between the years of 2015-2016, to carry out some experiments of his PhD thesis. His PhD works are still continuing. He is currently research assistant in the Muş Alparslan University, Department of Molecular Biology and Genetics. His working areas are about probiotic bacteria, bacteriocins, molecular genetics, cloning and knock-out of lactic acid bacteria and lactic acid production.