# IMMOBILIZATION OF PROBIOTIC BACTERIA INTO BIOCOMPATIBLE SUPPORT MATERIALS

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| **ABSTRACT**  The study aimed to immobilize breast milk bacteria with desired probiotic properties. Chitosan-polyethylene glycol (PEG) composite was chosen as the immobilization material. This material was expected to preserve its physical properties at low pH and in bile salts, and to allow the biological activities of the probiotic organism. In this direction, the immobilization of the functional groups on the composite surface was decisive. In the study, successful immobilization of probiotic bacteria was achieved and the viability of these bacteria before and after immobilization in chitosan-PEG support material was investigated. High viable counts (̴146 cfu/g) were obtained after 48 hours of incubation at 37°C. Bacteria were dissociated from gel beads by various methods. Model digestion conditions were tested and the robustness of immobilized bacteria was investigated. Immobilized cells showed high resistance to low and neutral pH values, and similarly high viable counts were also obtained in the presence of simulated pepsin (̴ 100 cfu/g) and high concentrations of bile salts (̴ 200 cfu/g). In addition, it was determined that immobilized probiotic bacteria showed increased resistance to various antibiotics (such as Vancomycin, Penicillin). |

# Keywords: Immobilization, Chitosan, Lactic Acid Bacteria, Probiotic