



EFFECT OF MICROENCAPSULATION AND COATING ON THE SURVIVABILITY OF LACTOBACILLI PROBIOTICS IN YOGURT AND GASTROINTESTINAL CONDITIONS

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ABSTRACT

Microencapsulation of probiotics is an efficient way that can improve the viability rate of them in dairy products like yogurt as well as in lumen tract conditions. The viability of free and microencapsulated forms of *Lactobacillus rhamnosus* and *Lactobacillus acidophilus* were evaluated in yogurt and under simulated gastrointestinal conditions. Microencapsulation and double coating process carried out by alginate-chitosan and Eudragit S100 nanoparticles and by the extrusion method. Bacterial count (cfu g⁻¹) of *L. acidophilus* reduced from 7.0×10^8 to 4.2×10^6 in day 0 and in day 42 in yogurt containing free bacteria, while the bacterial count of microencapsulated bacterium showed a reduction from 3.3×10^7 to 2.5×10^7 . Microencapsulation of *L. rhamnosus* could also increase the viability of this bacterium; 3.2×10^9 to 5.8×10^6 bacterial count by reduction of free-form storage, and 7.6×10^9 to 3.4×10^8 bacterial count by reduction of microencapsulated form in 42 days. On day 14 (first day of bacterial count in gastrointestinal condition) *L. acidophilus* count was 1.3×10^3 and 5.0×10^7 which reached 2.0×10^0 and 2.8×10^4 on day 42 in free and microencapsulated forms respectively. The bacterial count of *L. rhamnosus* decreased from 1.2×10^3 to 5.0×10^0 in free form, and from 2.5×10^7 to 2.8×10^4 in microencapsulated one. The results of this study suggest that this method of microencapsulation can improve the viability of *L. rhamnosus* and *L. acidophilus* in yogurt and in the simulated human gastrointestinal tract.
