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***In-vitro* Gastrointestinal viability and stability of free (un-encapsulated) and encapsulated Probiotic Bacteria**

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The viability of probiotic is the major concern for getting numerous claimed therapeutic benefits. The viability of probiotic is affected when they are encountered to hostile conditions of gastrointestinal tract. In present study, probiotic bacteria (*Lactobacillus acidophilus*) were encapsulated with two biopolymer (Sodium alginate and Carrageenan) using encapsulator (B-390). The formed beads were characterized by optical, Scanning electron microscopy (SEM), FTIR & XRD. The invitro gastrointestinal assay was carried out by subjecting non-encapsulated and encapsulated probiotics to simulated gastrointestinal juices. Encapsulated probiotics showed more resistance to simulated gastrointestinal condition than un encapsulated. The initial cell count of probiotics encapsulated with sodium alginate and carrageenan was 10.4 log CFU and 10.6 log CFU respectively and decreased to 6.8 log CFU and 6.3 log CFU during incubation to simulated gastric conditions over 120 minutes. While for unencapsulated cells the number decreased from initial 10.3 log CFU to 2.1 log CFU. In case of encapsulated only 3 log while for free cells 8 log reduction in cells was observed Similarly, during exposure to simulated

intestinal conditions the initial cell count of probiotics encapsulated with sodium alginate and carrageenan was 11.5 log CFU and 11.4 log CFU respectively and decreased to 8.4 log CFU and 7.9 log CFU. While for unencapsulated cells the number decreased from initial 11.3 log CFU to 3.8 log CFU. Conclusively, the results of the study indicated that microencapsulation played significant ($P < 0.05$) role in maintaining the recommended viability (106–107 CFU/mL) of probiotics in simulated conditions for their effective therapeutic benefits.

Speaker Biography

Muhammad Afzaal is working as lecturer and focal person at Institute of Home & Food Science, Government College University Faisalabad, Pakistan since 2013. His area of research and interest is food microbiology, food biotechnology, food safety and marketing of value added products. He started his teaching profession from the University of Faisalabad in 2011. He joined GC university in 2013 and is involve in teaching research relevant to food microbiology and biotechnology. He has published more than 15 research papers, one book and 02 chapters in well reputed journals. He has executed many research projects as a team member and coordinator. He is currently supervising M.Phil. students. He has been the part of organizing many national and international conferences and food product development competitions.

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