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Oral vaccine delivery by probiotics: Novel utility of functional food therapeutics

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Over the past few decades, advancements in molecular and cell biology have allowed researchers to identify a large number of new antigens from a variety of viral and bacterial pathogens. However, successful development of these antigens into effective vaccines strongly relies on delivery systems able to avoid the rapid loss of biological activity that often impairs antigen efficacy. Microorganisms have been used for a long time in food and alcoholic fermentation. In the last few years they have undergone scientific scrutiny of their preventative and therapeutic aspects. This has led to the discovery of use of a probiotics as a vaccine. Probiotic microorganisms include the LAB Lactobacillus acidophilus, Lactobacillus bulgaricus, Lactobacillus casei, Lactobacillus plantarum and Lactobacillus rhamnosus. Use of these live bacteria to elicit an immune response or to carry a vaccine component is a new invention in vaccine development. Probiotic bacteria target inductive sites of the host immune system such as mucosal surfaces and antigen-presenting cells (APCs) on macrophages. Probiotics, especially Lactobacillus species, for the prevention of rotavirus diarrhea has been studied and shown encouraging results.Clinical studies revealed that low-level expression of Merozoite surface protein 119 in Lactococcus lactis was able to confer strong protection against the malarial parasite. A study conducted in mice demonstrated that oral administration of recombinant L. lactis encoding the V2-V4 loop of the HIV env gene can induce HIV-specific mucosal and systemic immunity. Taken together the immunomodulatory and therapeutic potential, probiotics may offer the novel immunotherapy for the multifarious disorders.

Biography

Dr. Sagar Jadhav has completed his B.V.Sc & A.H. with distinction from Maharashtra Animal and Fishery University Nagpur and doing post-graduation studies from National Dairy Research Institute,Karnal,Haryana. He has consistent academic record with distinction. He has been awarded as Junior Research Fellow by Indian Counsil of Agricultural Research.He has published three abstracts in International conferences and has been invited for oral presentation.