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Efficacy of Dead Probiotic Cells

Editorial

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Worldwide consumer's awareness and inclination towards healthful food products capable of conferring health benefits besides providing basic nutrition have led to coin the term functional foods. Foods that contain some health-promoting component(s) beyond traditional nutrients are termed as functional foods. Demonstrated therapeutic evidence has projected probiotics as one of the fastest growing categories of functional food but the market survey of fermented and probiotic containing foods indicated presence of significantly lower levels of viable cells in contrast to those expressed on the product label [2, 4, 9]. In 2013, the global probiotic market was estimated as a value of USD 32.06 billion and is expected to reach USD 52.34 billion by 2020 [3].

FAO/WHO (2001) defines "probiotics as live microorganisms which when administered in adequate amounts confer a health benefit on the host". As per the definition viability of probiotic organisms is prerequisite for exhibiting health benefits and the recommended dosage of probiotics is 10^8-10^{10} cfu/day [10]. Ouwehand and Salminen (1998) [11] concluded that both viable and non-viable probiotics may be useful for short-term treatment or prophylactic treatment of diarrhoea, but viable probiotics are necessary for an enhanced immunological response. Recent research has also revealed that viable probiotics are more efficacious than inactivated probiotic products indicating that non-viable probiotics could also have some health benefits [1, 7]. Equal effectiveness of viable and heat-killed *Lactobacillus rhamnosus* GG [6] and greater efficacy of heat-killed *Lactobacillus acidophilus* LB than viable non-specified strain of *L. acidophilus* [12] for the treatment diarrhoea were noted. Preclinical evidence suggested non association of some mechanisms of probiotic action on cell viability such as adhesion to host tissues and modulation of innate immune responses [7].

It was further denoted that application of inactivated cells may be a safer approach than using live microbes in premature infant immediately after birth or in immuno-suppressed individuals [8]. Further research is emerging to explore the mechanism of action of probiotics and to evaluate whether the live and dead cells have similar efficacy for all diseases or disorders.

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