

VISVESWARAIAH TECHNOLOGICAL UNIVERSITY

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“PROBIOTIC STUDIES ON LACTIC ACID BACTERIA ISOLATED FROM INDIAN COW VARIETIES”

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SUBMITTED BY

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UNDER THE GUIDANCE OF

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CHAPTER 1

INTRODUCTION

There is a tendency to regard all micro organisms as harmful; to equate bacteria with germs. Nothing could be further from the truth. The number of non pathogenic species far exceeds the number of pathogenic species and many of the non pathogens are in-fact useful, even essential for the continued existence of life on earth. One example of a beneficial group of micro organisms is those which inhabit the gastrointestinal tract of animals.

Probiotics are live microorganisms thought to be beneficial to the host organism. According to the currently adopted definition by FAO/WHO, probiotics are: "Live microorganisms which when administered in adequate amounts confer a health benefit on the host" (FAO/WHO, 2002). Lactic acid bacteria (LAB) and Bifidobacteria are the most common types of microbes used as probiotics; but certain yeasts and bacilli may also be helpful.

Etymologically, the term appears to be a composite of the Latin preposition *pro* ("for") and the Greek adjective *βιωτικός* (biotic), the latter deriving from the noun *βίος* (bios, "life") (Hamilton-Miller *et al.*, 2003).

Probiotics are used from long times in food ingredients for human and also to feed the animals without any side effects. Also probiotics are acceptable because of being naturally in intestinal tract of healthy human and in foods. There are a large number of probiotics currently used and available in dairy fermented foods, especially in yogurts. Lactic acid bacteria constitute a diverse group of organisms providing considerable benefits to humankind, some as natural inhabitants of the intestinal tract and others as fermentative lactic acid bacteria used in food industry, imparting flavor, texture and possessing preservative properties. Beyond these, some species are administered to humans as live microbial

supplements, which positively influence our health mainly by improving the composition of intestinal microbiota. For this reason, they are called probiotics. Some selected strains of *Lactobacillus*, *Bifidobacterium*, *Streptococcus*, *Lactococcus* and *Saccharomyces* have been promoted in food products because of their reputed health benefits (Dimer & Gibson 1998; Sanders, 1998; Fuller, 1991; Ouwehand *et al.*, 1999; Puupponen-Pimia *et al.*, 2002).

Probiotics are also challenging for the industrial applications. The probiotic concept is open to lots of different applications in a large variety of fields relevant for human and animal health. Probiotic products consist of different enzymes, vitamins, capsules or tablets and some fermented foods contain microorganisms which have beneficial effects on the health of host. They can contain one or several species of probiotic bacteria. Most of products which destine human consumption are produced in fermented milk or given in powders or tablets. These capsules and tablets do not used for medical applications. They are just used as health supporting products. The oral consumption of probiotic microorganisms produces a protective effect on the gut flora. Lots of studies suggest that probiotics have beneficial effects on microbial disorders of the gut, but it is really difficult to show the clinical effects of such products. The probiotic preparations use for traveller's diarrhoea, antibiotic associated diarrhoea and acute diarrhoea which is showned that they have positive therapeutic effect (Gismondo *et al.*, 1999; Cakir, 2003; Quwehand 1999).

1.1 BENEFITS

Experiments into the benefits of probiotic therapies suggest a range of potentially beneficial medicinal uses for probiotics. For many of the potential benefits, research is limited and only preliminary results are available. It should be noted that the effects described are *not* general effects of probiotics. Recent research on the molecular biology and genomics of *Lactobacillus* has focused on the interaction with the immune system, anti-cancer potential, and potential as a biotherapeutic agent in cases of antibiotic-associated diarrhoea, travelers' diarrhoea, pediatric diarrhoea, inflammatory bowel disease and irritable bowel syndrome (Ljungh, 2009).