

*Chapter: II***Probiotics: An Intervening Challenge for Enhancing Human & Animal Health**

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**Introduction**

Agriculture & allied sectors are the foundation of the Indian economy as these sectors are the main contributors to gross domestic product. India's livestock sector is closely associated with agriculture & plays a crucial complementary role in rural people's economy. It is linked with the provision of meat, milk, eggs, wool, fibre, & manure, including profitable engagement & additional income to most of the population in rural areas (Smith et al., 2013). By 2050, it has been projected that the human population will attend up to 9 billion in the world & this increasing rise is directly connected with a growing demand for plant & animal-derived foods. The continual growth of the population has necessitated researchers to develop scientific & sustainable methods in terms of food production, with a decrease in production cost while not compromising the quality & safety of people & environment (Markowiak & Śliżewska, 2018).

Human & animals have co-existed since time immemorial. The health of man & animals is essential to maintain a proper ecosystem & the sustenance of life. Apart from the vital role of nutrition in growth & development, some other supplementary aspects are essential for maintaining health & counteracting diseases viz., cardiovascular diseases (CVD), allergy, obesity, & cancer. Moreover, in the animal system, diet-associated stress & abnormal rearing conditions can modulate changes in the microflora composition that compromises the animal's fight against infection. There have been scientific shreds of evidence towards the health profits in employing probiotics & prebiotics in human & animal nutrition. The supplementation of probiotic microorganisms manages the gut microflora shortages & re-establishes the animal's tolerance to disease. So, a new trend of "synbiotics" that is a combination of probiotic & prebiotic in food research has been evolved with time.