Sanders, M.E., Klaenhammer, T.R., (2001). *Invited Review*: The Scientific Basis of *Lactobacillus acidophilus* NCFM Functionality as a Probiotic. Journal of Dairy Science, 84, 319-331.

Abstract

Lactobacillus acidophilus NCFM is a probiotic strain available in conventional foods (milk, yogurt, and toddler formula) and dietary supplements. Its commercial availability in the United States since the mid-1970s is predicated on its safety, its amenability to commercial manipulation, and its biochemical and physiological attributes presumed to be important to human probiotic functionality. The strain has been characterized in vitro, in animal studies, and in humans. NCFM is the progenitor of the strain being used for complete chromosome sequencing and therefore will be a cornerstone strain for understanding the relationship between genetics and probiotic functionality. Both phenotypic and genotypic techniques have verified its taxonomic status as a type A1 *L. acidophilus* strain. It adheres to Caco-2 and mucus-secreting HT-29 cell culture systems, produces antimicrobial compounds, and is amenable to genetic manipulation and directed DNA introduction. NCFM survives gastrointestinal tract transit in both healthy and diseased populations. NCFM inhibits aberrant crypt formation in mutagenized rats, indicative of activity that could decrease the risk of colon cancer. A blend of probiotic strains containing NCFM decreased the incidence of pediatric diarrhea. NCFM led to a significant decrease in levels of toxic amines in the blood of dialysis patients with small bowel bacterial overgrowth. At adequate daily feeding levels, NCFM may facilitate lactose digestion in lactose-intolerant subjects. Further validation of the probiotic properties of NCFM in humans and clarification of its mechanisms of probiotic action are needed to better understand the role this strain might play in promoting human health.