

INFLUENCE OF RAW MILK QUALITY ON *LACTOBACILLUS ACIDOPHILUS* MULTIPLICATION AND PROBIOTIC YOGHURT PRODUCTION

Eva Csutak

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania
e-mail: szkkeva@yahoo.com

Abstract

Considering that the quality of raw milk is a prerequisite condition to obtain a good quality probiotic yoghurt, our studies aimed the measurement of milk factors which can affect the multiplication of probiotic lactic acid bacteria (LABs) *Lactobacillus acidophilus* LA-5. The probiotic strains *Bifidobacterium* BB-12 and *Lactobacillus acidophilus* LA-5 we used for trials- are tested probiotics by Christian Hansen company. We studied comparatively raw and pasteurized milk, their chemical composition and the correlations between the spontaneous microbial flora (NTG) found in milk samples and the impact of this flora on the multiplication of LABs. We investigated as well the effect milk proteins, added prebiotics (lactose, molasses) on pH and LAB development, the influence of NTG (number of total germs), NCS (somatic cells number) in raw milk before and after pasteurization, on lactic fermentations and LA-5(*Lactobacillus acidophilus*) Generally multiplication of LA-5 strains was reversely correlated with NTG values. There is a direct correlation between presence of prebiotics and probiotic bacteria activity.

Key words: yoghurt, probiotics, lactic acid, NTG, pasteurization

INTRODUCTION

Yoghurt is a long time known and appreciated dairy product, obtained traditionally by the spontaneous or induced lactic fermentation of milk. The microbiology of lactic-producing bacteria and the fermentation biochemistry and technology of yoghurt is well documented [1], [2], [3], [6], [13].

The term "probiotic" is known since 1903 when the benefic actions of *Lactobacillus acidophilus* strains were observed in human intestine, and the term of "prebiotic" is known since 1961, and define the substances, generally natural ingredients or microorganisms which improve the intestinal equilibrium and defense against pathological bacteria [4], [7], [11], [15].

Yoghurt, by its high content in lactic acid bacteria (LABs) possesses antimicrobial activity *in vitro* against a wide variety of Gram-positive and Gram-negative bacteria, as well as some fungi. The exact cause of inhibition is not known, but may be due to the antagonist action of LAB species which prevent the adherence, establishment,

replication, and/or pathogenic action of certain enteropathogenes. To improve continuously the quality of yoghurts, preservation of probiotic characteristics and the shelf-life of live LABs, with improved capacity of fermentation, are needed [9], [10], [12], [17], [18].

Among many strains, *Lactobacillus acidophilus* is best candidates to be used, alone or in combinations as lactic fermenting microorganisms with high probiotic activity (Kailaspathy, 1997). An important factor which influence the development and survival rate of probiotic LAB is the milk quality and its bacterial flora. It is known that the quality of raw milk in Romania is still an unsolved problem, since the number of total germs and of somatic cells found in milk is higher than the permitted level in European Union (NTG <100000/ml, NCS<400000/ml) [2], [3].

Considering that the quality of raw milk is a prerequisite condition for obtaining a good quality probiotic yoghurt, our studies aimed the measurement of main milk factors which can affect the multiplication of probiotic-forming bacteria *Lactobacillus acidophilus*