

**RELATIVE CHANGES IN pH AND ACIDITY DURING
RIPENING OF CHEDDAR CHEESE, MANUFACTURED
BY USING *LACTOBACILLUS RHAMNOSUS* AS AN
ADJUNCT CULTURE**

— research paper —

MUHAMMAD RAMZAN^{*1}, HUMA NUZHAT^{**}, MIHAELA TITA^{*},
OVIDIU TITA^{*}

^{*}*Lucian Blaga University Sibiu, Romania, Faculty of Agricultural Science,
Food Industry, and Environmental Protection, Sibiu, Romania*

^{**}*National Institutet of Food Science and Technology, University of
Agriculture, Faisalabad, Pakistan*

Abstract: Cheddar cheese is produced by acidification and concentration of milk following gel formation with rennet, starter cultures promote acid development and in combination with adjunct cultures they confer distinct flavor and texture properties to cheese. *Lactococcus lactis* ssp. *cremoris* and *Lactococcus lactis* ssp. *lactis* are commonly used starter cultures for Cheddar cheese. *Lactobacillus rhamnosus* used as adjunct culture improves the flavour, imparts therapeutic properties, decreases bitterness and accelerates proteolysis of Cheddar cheese. For the present project, Cheddar cheese was manufactured from buffalo milk by using *Lactobacillus rhamnosus* in combination with starter cultures. Raw milk was tested for fat, total proteins, lactose, acidity, total solids, SNF and pH. After manufacturing, cheese was ripened at 6°C for a period of 90 days. During ripening cheese was evaluated for pH and acidity at the intervals of 0, 30, 60 and 90 days. Results obtained were statistically analyzed to assess the influence of the *Lactobacillus rhamnosus* on Cheddar cheese quality. On the basis of statistical evaluation, it was found that there is gradual decrease in pH and gradual increase in acidity during 90 day's ripening, while treatment T₂ was evaluated to be the best during storage by its texture and sensory characteristics, with *Lactococcus lactis* ssp. *cremoris* and *Lactococcus lactis* ssp. *lactis* (95:5) @ 1.5% + *Lb. Rhamnosus* @ 0.5% combination.

Keywords : Cheddar cheese, Physico-chemical analysis, , Storage study, Sensory Evaluation.

¹ Corresponding author. Mailing address: Lucian Blaga University of Sibiu, Romania, Faculty of Agricultural Sciences, Food Industry and Environmental Protection, Department of Food Biotechnology, 5-7, Dr. Ion Ratiu St., Sibiu, Romania, Tel. +040269211338, E-mail: ramzan1665@yahoo.com