

YEAST VITALITY MONITORING DURING THE FERMENTATION PROCESS OF BEER PRODUCTION

Linda Luarasi^{1*}, Rozana Troja², Luljeta Pinguli²

¹Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, Boulevard Zogu I, 1000 Tirana, Albania

²Department of Industrial Chemistry, Faculty of Natural Sciences, University of Tirana, Boulevard Zogu I, 1000 Tirana, Albania

*e-mail: linda.luarasi@gmail.com

Abstract

The yeast performance, during the alcoholic fermentation, directly depends on its activity - a function of the vitality and the physiological state of the viable cells. In order to undertake corrective actions before the inoculation process, it is important to predict the yeast vitality. Yeast vitality is the life span of the vegetative cells and their ability to reproduce.

The most used method is the selective staining of the cells and then the averaging of results obtained in over 10 microscopic plots. The most used stain colors are methylene blue or methylene violet, which penetrate the damaged membranes of dead cells becoming stained, unable to penetrate the impermeable membranes of viable cells which remain transparent. The accepted level of vitality is 80% of viable cells, meanwhile the second and the third generations, which are highly adaptive rather than the first generation, may reach a vitality level up to 90%.

A vitality analysis was carried out for the bottom-fermentation yeast *Saccharomyces cerevisiae* sp. *carlsbengensis*, in a private brewery company in Tirana, during 2015 (January - December), considering the generation I up to generation IX. In the first three generations the average vitality was almost the same, 85%. There was a slight decline from the generation III to generation VII, 85% to 81%, and a sharp increase to generation VIII and IX, 87% and 86%, respectively.

As a conclusion, there are different levels of vitality among the generations, but the difference is not significant, which means there isn't noted any important changes in the biotechnological abilities of the fermentation yeast strain.

Key words: *Vitality, Yeast, S. cerevisiae, Fermentation.*