## THE RELATIONSHIP BETWEEN YEAST VIABILITY AND CONCENTRATION IN THE FERMENTATION PROCESS OF WORT FOR BEER PRODUCTION

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## ABSTRACT

Beer production depends on a controlled fermentation of wort by a known variety of yeast. Yeast quality, in terms of its viability and vitality, depends of the integrity of the yeast plasma membrane. The yeast cell membrane is affected by the stresses that occur during the brewing process and particularly during storage. The number of viable cells and the total concentration of yeast slurry are important indicators for the performance of the fermentation. Historically, these parameters have been measured using methylene blue staining of the yeast population. Methylene blue is an autoxidisable dye, once it enters into the cytoplasm of a living cell results in its oxidation to the colourless leuco-form. In brewing, yeast may be reused many times. A number of yeast repitchings differs significantly among the breweries. Adjusting the number of times a strain may be serially repitched is of great importance for quality and consistency of final products. In this study, the methylene blue staining method was applied for determining yeast viability and spin method for determining the cell concentration of yeast slurry. Samples were taken from Saccaromyces uvarum (carlsbergensis) lager yeast at different generations, from I to XI, after a serial repitching. Meanwhile, yeast slurry samples were analyzed for the concentration of cells. The focus of this study was to evaluate the relationship between these two parameters. Two trials were carried out in a 12 months period per each. Based on the obtained results, the first trial showed no correlation at all with an insignificant value (0.001). The second trial showed a negative correlation between yeast viability and concentration with a value -0.28.

Keywords: Viability, concentration, yeast, S. cerevisiae.