Study of the Fluorescent Qualities of Yeasts in Different Liquid Environments

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From fermented liquids such as beer or wine to a number of confectionery goods dry yeast is a necessity for the food industry. In industrial processes growth of yeast is closely monitored and the amount of yeast as well as changes in the yeast's environment are registered and responded to in order to increase efficiency of the production processes. The aim of this research was to further advance monitoring techniques of quantity and quality of yeasts used in industrial processes using Spectral Fluorescence Signature method (SFS). Three solutions of living yeasts and three of dried yeast were prepared in three different liquid phases: clean water, molasses with impurities and water solutions of molasses and their SFS spectra were measured. The 3D fluorescence spectra of yeast is measured with the SFS method and mathematical analysis of the spectra obtained is done using chemometric methods. It is an express method as the measurements of SFS spectra take about three minutes and no sample preparation is needed. Analysis of the spectra showed that the SFS of yeast changed significantly depending on the state of the yeast as well as on the character of the environment so the method could be used for the study of quality and quantity of yeast.

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