

ABSTRACT:

Lucie Kasalová

Microbiological load of raw materials at downtimes in storage tanks and equipments

Bachelor thesis

Charles University, Faculty of Pharmacy in Hradec Králové

Health bioanalytics

Background:

The aim of bachelor thesis is to find out whether the raw materials, used for food production, can be used for the recommended storage period but also after this period and to what extent they are affected by the increase of microbes. Further characterize the classical cultivation methods used in food microbiology and the process for the determination of microorganisms in food.

In the experimental part, which deals with the testing of raw materials (fruit concentrates) stored in storage tanks, we try to find out to what extent they are subject to microbiological stress. For the comparison of the results of the experimental part, two sampling points will be selected - the first on the panel for the tank, the second on the mixing tank, where the raw material goes into the production part.

Methods:

The theoretical part is focused on description of cultivation methods used in microbiological laboratories for determination of individual microorganisms, especially determination of total number of microorganisms, determination of number of molds and yeasts etc.

In the practical part, the differences in the number of microorganisms in fruit concentrates were observed in the production sphere, where the samples were taken during the use of the raw material 3 times to 6 times. The aim of this work was to find out to what extent the microbiological burden is found in the raw material and to check if the raw material is self-sustaining even after the recommended period for consumption.

Results:

In the fruit concentrate samples individual colonies of microorganisms were counted. Counting colonies was performed on each sample of apple and grape concentrate in parallel on two Petri dishes.

For Apple concentrate, storage times in storage tanks should be 2 months. It can be seen from the results that this raw material can be labeled as self-sustaining since the results of the microbiological load corresponded to the microbiological parameters determined for storage in the tanks for more than 2 months longer and the whole raw material for production was used.

The grape concentrate is the opposite. From the results obtained, the increase of the microbial load with storage time is visible, when the raw material has a large microbial load before the end of the recommended shelf life. Therefore, it is not possible to mark grape concentrate as a self-sustaining raw material.

Conclusions:

The results found show that the raw materials under investigation differ from one another. Both the composition of carbohydrates (fructose in apple concentrate, D-glucose in grape concentrate) and the subsequent microbiological load, which was much higher in the grape concentrate, as evidenced by the obtained values.

Keywords: fruit concentrate, microorganisms, cultivation methods