

Screening of Antagonistic/Synergistic Effect between Lactic Acid Bacteria (LAB) and Yeast Strains Isolated from Kefir

Authors : Mihriban Korukluoglu, Goksen Arik, Cagla Erdogan, Selen Kocakoglu

Abstract : Kefir is a traditional fermented refreshing beverage which is known for its valuable and beneficial properties for human health. Mainly yeast species, lactic acid bacteria (LAB) strains and fewer acetic acid bacteria strains live together in a natural matrix named "kefir grain", which is formed from various proteins and polysaccharides. Different microbial species live together in slimy kefir grain and it has been thought that synergetic effect could take place between microorganisms, which belong to different genera and species. In this research, yeast and LAB were isolated from kefir samples obtained from Uludag University Food Engineering Department. The cell morphology of isolates was screened by microscopic examination. Gram reactions of bacteria isolates were determined by Gram staining method, and as well catalase activity was examined. After observing the microscopic/morphological and physical, enzymatic properties of all isolates, they were divided into the groups as LAB and/or yeast according to their physicochemical responses to the applied examinations. As part of this research, the antagonistic/synergistic efficacy of the identified five LAB and five yeast strains to each other were determined individually by disk diffusion method. The antagonistic or synergistic effect is one of the most important properties in a co-culture system that different microorganisms are living together. The synergistic effect should be promoted, whereas the antagonistic effect is prevented to provide effective culture for fermentation of kefir. The aim of this study was to determine microbial interactions between identified yeast and LAB strains, and whether their effect is antagonistic or synergistic. Thus, if there is a strain which inhibits or retards the growth of other strains found in Kefir microflora, this circumstance shows the presence of antagonistic effect in the medium. Such negative influence should be prevented, whereas the microorganisms which have synergistic effect on each other should be promoted by combining them in kefir grain. Standardisation is the most desired property for industrial production. Each microorganism found in the microbial flora of a kefir grain should be identified individually. The members of the microbial community found in the glue-like kefir grain may be redesigned as a starter culture regarding efficacy of each microorganism to another in kefir processing. The main aim of this research was to shed light on more effective production of kefir grain and to contribute a standardisation of kefir processing in the food industry.

Keywords : antagonistic effect, kefir, lactic acid bacteria (LAB), synergistic, yeast

Conference Title : ICFSHN 2017 : International Conference on Food Science and Human Nutrition

Conference Location : Lisbon, Portugal

Conference Dates : April 16-17, 2017