

GENETICAL IDENTIFICATION OF ANTIBACTERIAL AGENTS PRODUCING MICROORGANISMS, ANALYSIS OF THEIR BACTERIOCINS AND KILLER TOXINS AND FOOD FERMENTATION ASSAY

Domantas Armonavičius, Audrius Maruška, Tomas Drevinskas

Instrumental Analysis Open Access Centre, Faculty of Natural Sciences, Vytautas Magnus University, Lithuania
domantas.armonavicius@stud.vdu.lt

In general, various preservatives are used to prevent the growth of pathogenic microorganisms in food. Recently, chemical supplements have been seeking to be replaced by more natural substances, such as bacteriocins secreted by lactic acid bacteria, which are widely researched worldwide for their antimicrobial properties and safety for human consumption [1]. In addition to lactic acid bacteria, various leavens also contain yeast, which produce killer toxins [2].

Searching for lactic acid bacteria and yeast in natural foods and investigating their application possibilities are relevant worldwide. In Lithuania, the use of yeast secreted killer toxins as natural antimicrobial agents and research on its impact on human health are new. Depending on the environmental conditions, the microorganisms adapt, resulting in different strains that can produce antimicrobial substances with different properties. Therefore, it is important to evaluate their stability against various environmental factors and to determine influence on food fermentation.

The aim of this work is genetically identify lactic acid bacteria and yeast, to produce killer toxins and bacteriocin based resistance to various environmental factors, as well as food (milk) fermentation and capillary electrophoresis analysis. Polymerase chain reaction (PCR), antibacterial activity assay and capillary electrophoresis integrated with electrophoresis data segmentation method were used for this task [3-5]. *Leuconostoc mesenteroides* lactic acid bacteria and *Kluyveromyces marxianus*, *Debaromyces hansenii*, *Candida zeylanoides*, *Candida inconspicua* yeasts were identified during this work. Antibacterial activity of the isolated yeast killer toxins supernatants was investigated at 40-121°C, pH 2-12 in 5, 8, 10% NaCl medium. After capillary electrophoresis analysis and electrophoresis data segmentation method application it was found which substances, produced by *Leuconostoc mesenteroides* and *Debaryomyces hansenii* have potentially antibacterial properties. Detailed results of the work will be presented during the conference.

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