OP291

Biodiversity of Bacteria Isolated from Home-Made Wine and Vinegar

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Aim of the study: Wine is an alcoholic beverage made grapes fermented without the addition of sugars, acids, enzymes, water. It has been consumed by human beings in religious ceremonies since ancient times. Vinegar is sour juice that is used as a sweetener in meals, in salads, or as a preservative such as brine. It has historically had a great variety of industrial, medical, and domestic uses are still commonly practiced today. The aim of this study was to determine the bacterial biodiversity of home-made wine and vinegar using classic and molecular methods.

Material and Methods: Home-made wine and vinegar samples were collected from the villages of Aydın. Bacterial growth was realized on HS (Hestrin-Schramm) Agar at 30ºC for 72 h. After incubation, each different colony were isolated and stocked in skim milk. Morphological, cultural and biochemical identifications were made according to the Bergey's Manual of Systematic Bacteriology. For molecular identification DNA isolation of the samples were made according to De Boer and Ward (1995). After isolations DNA concentration and purity was measured with nanodrop spectrometer (Thermo Scientific). 16S rRNA PCR reactions were carried out at initial denaturation 95ºC 5 min, denaturation 94ºC 40 sec, annealing 50ºC 40 sec, extension 72ºC 40 sec with 35 cycles and a final extension at 72ºC 10dk. Reagents concentrations were 10X Taq Buffer, 0.5M dNTP mix, 10 pM from each primer, 7.5 mM $MgCl_2$ and 1U Taq polymerase with the final volume of 25 µl. PCR products were sent to the sequencing (GATC BioTech, Germany) after electrophoresis at 1.4% agarose gel at 90 V 40 min.

Results: In this study, a total of 50 samples were isolated from home-made wine and vinegar. According to the morphological characterization, 6 of these samples were found to be Gram positive rod shaped bacteria, 22 of these samples were found to be Gram-negativerod-shaped bacteria and 22 of these samples were found to be Gram-variable. PCR results of these samples were sent to the sequencing (GATC BioTech, Germany). It is expected to be found *Gluconacetobacter* sp., *Acetobacter* sp., and *Lactobacillus* sp. Molecular identification will be made by compairing sequence results with Genebank using BLASTn software.

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Keywords: Wine, Vinegar, Bacteria,Biodiversity, 16S rRNA.