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Bacterial community in the processing of wine during the regulated and spontaneous fermentation

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Bacteria are part of the natural microbiota present in wine manufacturing. On one hand, bacteria can affect the final product, but they also have an important role in winemaking. For example, they reduce wine acidity and contribute to aroma and flavor development. This study deals with the identification of bacterial community during of wine production of the variety Rulandské biele (Pinot Blanc) in the Small Carpathian region. The aroma-active compounds of wine were analyzed too. Two different approaches were employed for the production of wine. In the first approach a yeast starter (*Saccharomyces cerevisiae*) was added, while the fermentation of the second approach was spontaneous carried out by autochthone microbiome. RNA was extracted from must, fermented must and young wine before filtration. The 16S rDNA-based next generation sequencing was performed by the Illumina MiSeq platform. The results displayed the dominant bacterial groups as well as the identification of bacterial contaminants. The acetic acid bacteria were detected in each sample, mainly *Gluconobacter* (from 8% to 34%). The RNA analysis was able to detect various bacteria (*Enterobacteriaceae* and *Pseudomonas spp.*) at significant levels. Aroma-active compounds were identified by gas chromatography-olfactometry in both young wines. The aroma profile of wine produced with the starter was different from the wine derived by spontaneous fermentation. Adding pure yeast culture (*Saccharomyces cerevisiae*) improved sensory and improved quality of wine.

Biography

Andrea Puškárová graduated from the Faculty of Natural Sciences, Comenius University in Bratislava (Slovak Republic). She obtained the PhD. in microbiology. Since 2000 she is scientific researcher of the Institute of Molecular Biology, Slovak Academy of Sciences. She is a member of the Laboratory of Environmental and Food Microbiology. The research activities is focused on the study of the microbial communities responsible for the deterioration of our cultural heritage and quality of traditional Slovak food (cheese, sheep cheese, Slovak wine). During her carrier she participated in different National and International scientific projects. She is co-authors of 29 scientific CC publications.

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