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Heavy metals in Georgian red wines Kindzmarauli and Saperavi

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At valuation security of wines, special role should be given to analytical control of pollutants, such as heavy metals (HM) which potentially have toxic and carcinogenic properties. So, important is the determination of their content in wines and assessment of effect on threshold of their toxicological effects on living organism. Contents of HM in wines depend on type of soil, processing conditions of vineyard, climatic conditions, vinification, anthropogenic factors and so on. In work, first, the migration of heavy metals Pb, Cu, Zn, Cd, Co, Ni, Mn, Fe in a chain: soil→stem→skin→pulp→wines Kindzmarauli and Saperavi from unique vineyards Mukuzani and Sabue of Kakheti region of Georgia were studied. All solid samples were treated by method of dry mineralization. To determine the HM content in samples, atomic absorption spectrophotometry (Perkin-Elmer Analyst 200) was used. With increasing depth of soil from 5 to 50 sm HM contents decreased in Mukuzani vineyard: Cu from 53.65 till 42.6mg kg⁻¹ in and Zn from 78.5 to 67.1mg kg⁻¹, but in cleaner region-Sabue vineyard, content of all elements studied increased a little with increasing depth. In chain, soil →stem→skin→pulp →wines, the quantity of HM decreased, more than an order, but non-uniquely. In leaves, content of Cu and Fe in 5-10 times prevail their content in soil and skin, in juice and wine decreased in hundred times. It is known that the use of copper containing fungicides for the disease control of plants could also lead to increase in the Cu amounts of grapes, as well as of the products obtained from their processing. But in Georgian wines, the content of all HM not prevails 0.2 mg/l.). Most of HM in the grapes precipitates during fermentation into sediments, which is the reason for their significantly lower content in the wine.

Biography

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