

WINEMAKING INDUSTRY IN UKRAINE: ENVIRONMENTAL AND ECONOMIC ASPECTS

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Human health are influenced by four principle factors: genetic health (20%), lifestyle and quality of food (50%) of the environment (20%) and level of health care (10%). About 45% of toxic substances enter the human body with food, 30% with drinking water and beverages, and the rest is through the air.

One of the most widely consumed beverages in many parts of the world is wine, which has been well-known since the early periods of civilization. Besides its economical importance, this beverage can have a positive impact on human health, including the anti – cancer effect.

Wine is a complex matrix, which besides water, sugar and alcohol, contains a great variety of inorganic and organic components,. The composition and quality of wine is influenced by many factors related to the specific production area: grape varieties, soil and climate, culture, winemaking, transport and storage. Moderate wine consumption contributes to the daily intake of many essential metals, including Cr, Cu, Fe, Ni and Zn. Metals in wine affect its organoleptic properties, chemical composition, storage and risk associated with the daily uptake by consumers Consumption of wine may contribute to the daily dietary intake of essential metals (i.e., copper, iron, and zinc) but can also have potentially toxic effects if metal concentrations are not kept under allowable limits.

Wine production history of Ukraine starts from the ancient time and passed several periods of the development (1860 – 1980), destruction (1980 – 1988) and the restoration (1989 – up to the present time). Current problems of wine making in Ukraine are: (i) weak systems of wine authentication control and assessment of environmental and health security of alcohols; (ii) reduction of use of local vine cultivars what are adapted to specific climate conditions and growing of foreign cultivars, what increase the use of agricultural chemicals and (iii) environmental pollution of vine-growing and wine making regions.

Reduction of use of local autochthonous cultivars which are adapted to specific regional climate conditions and growing of “on fashion” foreign cultivars is the principle tendency in Ukrainian vine growing. This dynamic leads to the increase of the agricultural chemicals use for the yield increase and protection. Thus, in order to protect the vines against diseases, weeds, and pests, different pesticides are used, what are based on organic and inorganic components. The application of agricultural chemicals is the reason of the high content of potentially toxic metals in wine. Their intensive and long-term use has raised concerns regarding the negative effects on the environment, through toxicity to aquatic and

soil organisms and impacts on human health. Also, during the winemaking process, wine is exposed along the way of production, the casks/barrels/pipes used in fermentation and storage, and the vessels used for the storage and aging of wine, what can be additional sources of trace metals in the final product. Results of our research showed that wine from Crimea viticulture region are contaminated with Cu, Zn and Pb, because of the application of pesticides and pollution of the vineyard. Weak systems of wine authentication control is the another problem that constrains the development of the environmentally friendly and health secure wine production in Ukraine. Ukrainian wines are not classified according to the specific regional patterns (climate, soil, etc.) and yield's year. Trace elements composition of the soil influences the wine quality and can be used for the first step to the wine authentication in Ukraine, what will provide consumers with the information on wine quality and open the opportunities for the Ukrainian wine export.

Further developments of wine making in Ukraine should be focused on the following environmental and economic aspects: identification of the regional wine specificity, control of the wine composition, environmental monitoring of vineyards and use of local vine cultivars. The positive economic effect of such actions can facilitate the increasing of Ukrainian wine quality and health security, its value on the international market and the growth of its export.

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