

## EFFECT OF BIOACTIVE ADDITIVES ON BIOMASS FERMENTATION FROM AGRO-INDUSTRIAL SECTOR

Tașca Corina<sup>1,2</sup>

<sup>1</sup>Institute of Chemistry, Moldova State University,

<sup>2</sup>Technical University of Moldova,  
Chisinau, Republic of Moldova

E-mail: [zubic.corina@gmail.com](mailto:zubic.corina@gmail.com)

Wastes from the agro-industrial sector, due to their toxic effects with regard to plants and living organisms, cannot be dumped in the soil. However, they can serve as renewable source of value-added products, following the specific digestive treatment. This research was focused on studies of vinasse fermentation processes in the presence of bioactive substances introduced directly into the digested biomass. The results obtained testify that the substances of natural origin used as additives, demonstrate the pronounced effects on alcoholic fermentation of vinasse under the mesophilic conditions. Thus, the study of the effects of bioactive substances with possible antioxidant properties on biomass from winemaking sector with identification of these processes mechanisms can be a perspective direction, suggesting the new ways of wastes valorisation.

Table 1

Comparative efficiency of different types of additives of bioactive substances in the vinasse fermentation process at concentration of 0,003 g/L biomass

Nr. crt.	Bioactive substance used as an additive to the fermented biomass, 3g/L	Total volume of CO <sub>2</sub> emitted gas, cm <sup>3</sup>	Fermentation time, h
2.	Aescinum	251.01	55
3.	Tomatin	233.46	78
4.	Sclareol	232.50	55
7.	Betuline	250.00	80
8.	Menthol	200.00	70

The comparative assessment of different additives action in the studied processes have demonstrated that the dihydroxyfumaric acid caused the emission of 266 cm<sup>3</sup> CO<sub>2</sub> in 76 hours, aescinum – 251 cm<sup>3</sup> in 55 hours, tomatin – 233 cm<sup>3</sup> during 78 hours, sclareol – 232 cm<sup>3</sup> during 55 hours, vanillin – 229 cm<sup>3</sup> during 69 hours, whereas catechin – 180 cm<sup>3</sup> during 61 hours of fermentation, until the fermentation process was completed. The principle of stimulating and intensifying the biochemical fermentation process may be due to the oxidation - reducing properties of SBA.

**Acknowledgments:** the research was funded in the framework of State Project 20.80009.500727 "Physico-chemical mechanisms of redox processes with electron transfer involved in vital, technological and environmental systems", running at Technical University of Moldova, Department of Oenology and Chemistry.

**Keywords:** agro-industrial wastes, vinasse, fermentation, bioactive additives.