

## THE IMPACT OF EXPERIMENTAL ACTIVATED CARBONS ON POLYPHENOL OXIDASE ACTIVITY IN MUST AND WINE

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Browning in the processing of grapes and obtaining of grape juice is a well-known phenomenon, the causes of which are mainly enzymatic in nature. In the presence of atmospheric oxygen, polyphenol oxidase (PPO) can catalyze the oxidation of natural phenolic substances, while the resulting quinones enter into secondary reactions with the formation of unwanted colored products.

These processes can cause drastic changes in the color and flavour of both the grapes and the grape juice, and significantly reduce the quality of the final product, which should be prevented in order to produce good quality wine [1].

The paper studies the modification of the oxidase activity, which is manifested by the browning of juice and wine made from white grapes varieties, such as Sauvignon, Viorica, Legenda, Pinot Gris, and the change in the chromatic characteristics of juice and wine obtained from red varieties (Cabernet – Petit, Cabernet-Sauvignon) from the Central region as well as from the Southern region of the Republic of Moldova with the administration of various doses of experimental activated carbon AC-C (0.2; 0.4; 0.6; 1.0 g/l), obtained from local raw material in the Laboratory of Ecology, the Institute of Chemistry of ASM. The PPO activity was traced from the processing of grapes to the production of wines. The involution of PPO activity over time is determined by the doses of sorbent used, but in different ways for different musts and wines.

It was found that the enzymatic activity was the highest in the grape juices of Viorica, Pinot Griş and Legenda varieties immediately after crushing fresh grapes and this activity was not detected after treatment with activated carbon. The best results were in juices treated with 1 g/l dose of activated carbon in all grape juices, where the PPO activity decreases to about 15 times. The decrease in PFO activity tends to reach constant values with increasing AC-C concentrations up to 1 g/l.

In particular, AC-C has reduced PPO activity in the wines produced from grapes affected by the gray mold (*Botrytis Cinerea*) by about 15 times compared to untreated must (Pinot Griş).

The use of AC-C allows to reduce the need for sulfites through 2 mechanisms: the elimination of some easily oxidizable components (cinnamates) and the elimination of the most important oxidases in grapes.

**Keywords:** activity, enzymes, polyphenol oxidase, activated carbon, grapes, juice, browning, dynamics, wine, must.

### References:

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**Achnowledgements:** The research was funded by State Project 20.80009.7007.21 „Reducing the impact of chemical, toxic substances on the environment and human health through the use of absorbents and catalysts obtained from domestic raw materials” running at the Technical University of Moldova.