ICKT

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TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV

KYIV-TOULOUSE

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ACTIVITY OF LACCASE FROM *TRAMETES VERSICOLOR* IN AQUEOUS-ORGANIC MEDIA

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Laccase (EC 1.10.3.2) is oxidoreductase with broad substrate specificity and high catalytic activity. It is widely used in industrial biocatalytic processes. Substrates (phenols, benzyl alcohol, lignin, etc.) and mediators of laccase are typically lipophilic. However, the enzyme, in contrast, is soluble and exhibits catalytic activity in water. This significantly limits the practical application of laccase and requires a special study of the problem of creating water-organic media for acceptable implementation of the oxidation of organic substrates by laccase.

Based on the above, the purpose was to study the influence of organic solvents (OS) on the catalytic activity of laccase from *Trametes versicolor*.

Objects of research: hydroquinone, laccase from *Trametes versicolor* and OS (acetonitrile, ethanol and dimethyl sulfoxide). Oxidation of hydroquinone by laccase was performed in citrate buffer system (pH 4.5) at atmospheric pressure, T = 308 K. The reaction kinetics was investigated by UV-Vis-spectroscopy. The kinetic parameters K_m and V_{max} of enzymatic oxidation of hydroquinone were determined from double reciprocal Lineweaver–Burk plot.

The addition of OS into the reaction mixture was found to cause a decrease in the initial rate of oxidation of hydroquinone and accordingly K_m and V_{max} (Fig.).

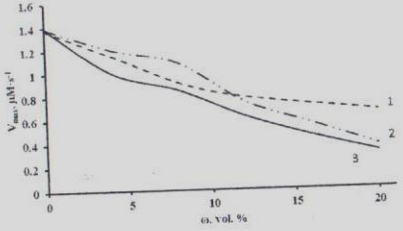

Fig. – Dependence of the maximum speed of laccasic oxidation of hydroquinone from composition a binary mixture of water-OS. 1 – DMSO; 2 – CH_3CN; 3 – EtOH.

As shown in the figure, DMSO has a milder effect on the activity of laccase.

The data were used in further studies of laccase-mediator systems.