

THE INFLUENCE OF BLACK RADISH PEROXIDASE IMMOBILIZATION METHODS ON KINETICS CATALYTIC HYDROQUINONE OXIDATION

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Enzymes are highly selective catalysts of a numerous chemical transformations. It is known that the enzyme immobilization allows increasing their activity, heat and acid resistance and also extending their storage period. Thus, obtaining new enzymatic agents by various methods of enzyme immobilization on insoluble carriers is a promising task. Presented work is dedicated to the study of black radish peroxidase immobilization on silica gel by means of sol-gel method, as well as the study of the enzymatic agents' activity obtained as a result of oxidation reaction of hydroquinone in an aqueous solution.

The proposed method of obtaining agents with peroxidase activity is carried out by including the enzyme derived from black radish root into the silica gel pores. It is established that during peroxidase immobilization on silica gel by means of sol-gel method occurs a physical binding between substrate and enzyme. It increases the effective enzyme activity on hydroquinone comparing to its native form. However, it leads to

catalyst loss during the process of purifying the target product from chloride ions and complications of catalytic process in connection with sorption in investigated systems.

Therefore black radish peroxidase immobilization by including into the silica gel pores is advisable to carry out in the system chloride ammonium peroxidase extract/silicate adhesive (not diluted water glass) in volumetric ratio of 1: 1 at pH = 7, followed by drying the xerogel under air at room temperature, without removal chloride ions from it.

Keywords: peroxidase, immobilization, enzymatic activity, hydroquinone.

References

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