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Photosynthetic content and total phenolics in *Mentha piperita* L. shoot cultures

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Surface-sterilised *Mentha piperita* L. seeds were cultivated on a Murashige and Skoog (MS) medium supplemented with 0.15 mg L^{-1} Gibberellic Acid (GA3). The effect of BA (6-benzyladenine) and IBA (indole-3-butyric acid) on photosynthetic pigments and total phenolics production were tested on 4 week old shoots cultivated on MS medium containing different concentrations of BA or BA in combination with 0.1 mg L^{-1} IBA. Different concentrations of BA alone generally induced variable changes in photosynthetic pigments contents as well as in total phenolics contents of *M. piperita*. Significant increase of photosiynthetic pigments contents induced concentration of 0.1 mg L^{-1} BA. Application of BA in combination with IBA had stimulating effect on phenolics production when compared to the corresponding BA treatments or control.

Different immobilization methods of soybean hull peroxidase on macroporous glycidyl methacrylate copolymers

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Wastewater treatment is a current and important environmental issue. Phenolic compounds most of which are toxic and many even carcinogens, found in various polluted waters are non-biodegradable and present a serious health hazard. Enzymatic treatment, using peroxidase and H_2O_2, provides a highly selective and efficient alternative to current phenol removal methods, with low energy requirements and minimal environmental impact. Soybean hull peroxidase (SHP) isolated from soybean hulls, which are inexpensive agricultural waste products, offers a cheap source of crude enzyme available for various applications. In this study we used macroporous glycidyl methacrylate based copolymers with various surface characteristics and mean pore size diameter ranging from 40-200 nm as carriers and compared two different immobilization methods for SHP – glutaraldehyde and periodate. Our results demonstrate that SHP immobilization with both methods is influenced by the pore size of the carrier matrix with both the specific activity of the immobilized enzyme and immobilization yeald increased with pore size. Glutaraldehyde immobilization method proved to be substantially better than periodate with the highest specific activities obtained 22.8 U/g and 3.4 U/g of carrier respectively. Thermal stability at 85°C and stability in 80% dioxane solution indicate a stabilization of the immobilized enzyme compared to the free form. Although having the same pH optimum, immobilized enzyme operates over a broader pH range. Obtained biocatalyst shows an increased specific activity, higher thermal and organic solvent stability and operates over wider pH range and it's suitable for wastewater treatment.