



POTENTIAL APPLICATIONS OF ENZYME NANOREACTORS

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Abstract

Enzymes encapsulated lipid vesicles (liposomes) are named nanoreactors if the enzymes act in situ on specific substrates to form reaction products.

These systems mimic living cell because possess one or multiple lipid bilayers with protein channels, binding capacity, labeled capacity and inside reaction capacity between enzyme and specific substrate. The specific enzyme substrates and the enzyme reaction products can diffuse inside or outside of vesicles. The enzyme reaction products can be used as drugs in living organisms (drug delivery), as reagents in analytical determinations (in vitro), or as bioactive compounds (reduce the risk of certain diseases). Thanks to reducing size of vesicles, to improve the properties of enzymes, substrates and reaction products, such as delivery capacity, solubility, prolonged inside residence time and efficient absorption through cells.

In this paper will be presented and discussed some enzyme-containing vesicles, some reactions inside lipid vesicle, as well as the role of reaction products in analytical biotechnology, medicine and water treatment.

Key words: biotechnology, enzyme, lipid vesicle, nanoreactor

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