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Immobilization of Glucose Oxidase and Urease in Hydrogel Matrices

of

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Abstract: Immobilization of glucose oxidase and urease in hydrogels of 2-hydroxyethyl methacrylate, and N-vinyl pyrrolidone (NVP) was achieved by irradiation (using UV and γ rays). The effect of radiation on entrapment efficiencies, retention of activities and swelling rates was obtained. To optimize the system, duration of exposure, reaction temperature, co-monomer concentrations, initiator and cross linker compositions were varied. The repeated reusability of the generated products was also tested. It was found that γ -irradiation at very low temperatures did not have a detrimental effect on the enzyme activity. Incorporation of more hydrophilic monomer (NVP), influenced matrix morphology and entrapment efficiencies and retained enzyme activities positively. Repeated use studies revealed that there is a gradual loss (higher in the NVPL incorporated group) of activity following 10 runs. With the use of the present approach it is believed that the construction of biosensors using hydrogels of various forms is possible.

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