

Title: γ -Fe₂O₃ nanoparticles filled polyvinyl alcohol as potential biomaterial for tissue engineering scaffold

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Abstract: In this study, α -chymotrypsin enzyme was used as a substrate while micropore Y-zeolite, which is HY, USY and NaY as a support. The purpose of this study was to compare the physical properties of zeolite and immobilization of enzyme with zeolite. The characteristics such as BET surface area, isotherm adsorption, BJH adsorption, pore size, t-plot and pore volume have been studied. Furthermore, a comparison has been conducted between immobilized and mobile enzyme for their ability to adsorb hydrolysate at $\lambda=410$ nm. The stability of the immobilized enzyme was also determined by varying the parameters of phosphate and tris-chloride buffer and loading of sample solution. Based on the result obtained, HY zeolite has the best physical properties compared to USY and NaY zeolite. Besides that, immobilized enzyme gave higher hydrolysate adsorption activity than the free enzyme. Stability results showed that pH of phosphate and tris-chloride buffer and amount of sample solution play an important role in obtaining the stable immobilized enzyme.