

Molecularly Imprinted Hydrogels for Protein Recognition

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Molecular imprinted polymers (MIPs) are biomimetic receptors synthesized from the co-polymerization of a functional monomer and cross-linker around the template.^[1] MIPs have been studied for the purification and recognition of proteins, however, designing and synthesizing MIPs with high binding and specificity for macromolecules is still challenging.^[2] In this study, we take hemoglobin (Hb) as a model protein, a hemoprotein contained in red blood cells responsible for oxygen transport.^[3]

Here we design and optimize a method for the preparation of MIPs in the form of molecularly imprinted hydrogel (MIH) for Hb relying on bulk protein imprinting. Morphological analysis reveals the MIH having a more structured porous network compared to a more uniform morphology for the corresponding non-imprinted hydrogel (NIH). The adsorption ability and selectivity were assessed by measuring the absorbance after incubating the MIH in Hb and in a mixture containing Hb and other major protein competitors. Preliminary results show that high concentrations of other proteins did not interfere with the absorbance values presenting proof that the MIH has good selectivity towards Hb.

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References

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