

Preparation and evaluation of diltiazem imprinted chitosan based biomaterials for transdermal drug delivery system

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The main objective of this study was to prepare diltiazem (DTZ) imprinted biomaterials for hypertension therapy using chitosan (CH), polyvinyl alcohol (PVA), glutaraldehyde, and plasticizers. The DTZ imprinted CH/PVA based biomaterials were synthesized by a UV curing process. Surface properties of prepared biomaterials were characterized using FE-SEM analysis. In addition, the physical and water resistance properties of prepared biomaterial were investigated. DTZ recognition properties of prepared biomaterials were interpreted using the binding properties and Scatchard plot analysis. The results revealed that the prepared biomaterials have one site of DTZ as the target molecule. DTZ release properties on DTZ imprinted biomaterials were evaluated under various pH and artificial skin at 36.5 °C, respectively. Results indicated that DTZ release in high pH faster than in low pH. DTZ release using artificial skin was released sustainedly for 20 days. Furthermore, the DTZ release followed the Fickian diffusion mechanism, whereas DTZ release using artificial skin followed the non-Fickian diffusion mechanism.