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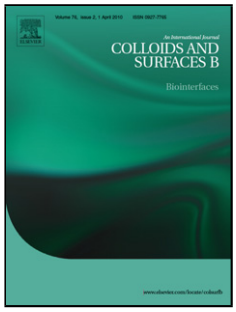

Title: Cholesterol Imprinted Composite Membranes for Selective Cholesterol Recognition from Intestinal Mimicking Solution

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Cholesterol Imprinted Composite Membranes for Selective Cholesterol Recognition from Intestinal Mimicking Solution

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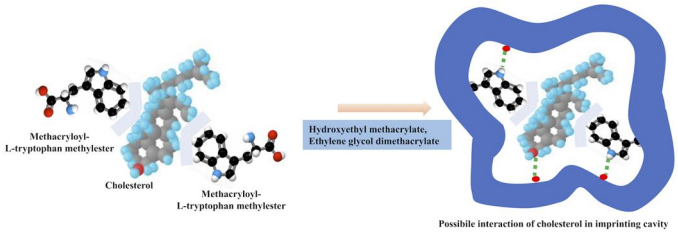
Graphical abstract



Highlights

- Composite membranes were synthesized for specific cholesterol adsorption
- Cholesterol adsorption is 23.43 and 6.79 mg/g for MIPsEM and NIPsEM, respectively
- α-values are 2.39 and 2.04 times higher than estradiol and stigmasterol
- The same membranes were showed 10-times adsorption-desorption cycles

ABSTRACT

Molecularly imprinted polymers which have been extensively investigated as selective adsorbents were constructed using a template molecule during the polymerization to gain template-specific cavities. In this study, we prepared cholesterol imprinted poly(2-hydroxyethyl methacrylate-methacryloyamidotryptophan) (PHEMA-MTrp) particles embedded composite membranes. These membranes were characterized through elemental analysis, FTIR, SEM, swelling tests, and surface area measurements. Adsorption experiments were performed in a batch experimental set-up, and the adsorption medium was either a methanol or intestinal-mimicking solution. Stigmasterol and estradiol were used as competing molecules in selectivity tests. Some results are as follows: the specific