# Development of poly(2-hydroxyethyl methacrylate)/clay composites as drug delivery systems of paracetamol



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| Résumé en anglais | In this work the synthesis of hydrogel/clay nanocomposites based on poly(2-hydroxyethyl methacrylate) (HEMA) has been performed through in situ free radical polymerization in order to examine their potential use in biomedical applications as drug carriers. 2-hydroxyethyl methacrylate monomer has been intercalated into the interlayer spaces of a clay mineral using sodium montmorillonite (MMT) nanoparticles and then polymerized. The influence of different amounts of MMT on the structural properties of the resulting novel materials HEMA/MMT was investigated by Fourier transform infrared spectroscopy (FTIR), differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). X ray diffraction analysis has been used to evaluate the state of dispersion of the clay particles in the hydrogel matrix. TGA, DSC and swelling results have revealed that the clay sheets acted as effective multifunctional cross-linkers. Paracetamol incorporation efficiency in the HEMA/MMT hydrogels was determined by UV–vis spectroscopy. The DSC study revealed an amorphization of paracetamol in the drug loaded hydrogel. The effect of varying the concentration of MMT within the hydrogel was investigated to obtain optimum conditions to control the drug release. The burst effect was significantly reduced and the releasing equilibrium time was extended in the nanocomposites HEMA/MMT in comparison to the HEMA hydrogel. |
| URL de la notice | http://okina.univ-angers.fr/publications/ua15711 [10] |
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**Liens**
[1] http://okina.univ-angers.fr/publications?f%5Bauthor%5D=26431
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[11] http://dx.doi.org/10.1016/j.jddst.2016.03.010
[12] http://www.sciencedirect.com/science/article/pii/S1773224716300995