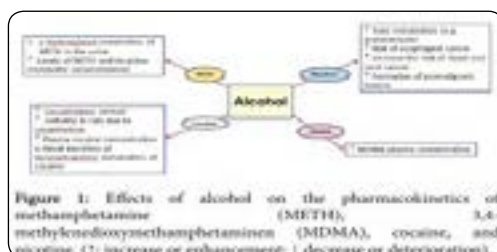


Polyamide fibers coated with anti-inflammatory drugs

Giménez Martín Elena, Rodríguez-Babe Rocío, Campos-Jiménez Daniel and López-Andrade Miguel
University of Jaén

Textile industry is undergoing new challenges looking for a wider range of application in different fields, among which it is possible to emphasize the development of new biomaterials or compounds of pharmacological interest. Our current research is focused on coating fiber with antiseptics and anti-inflammatory in order to prevent from contamination or inflammation and to achieve controlled topical release. In previous research, adsorption of Chlorhexidine onto different fibers and in its posterior desorption, have been studied. In the present work a study of the possibility to obtain polyamide fibers, PA 6.6, coated with anti-inflammatory drugs as Diclofenac Sodium, DCF-Na, and Dexketoprofen has been carried out with the aim of getting gauzes that could allow topical application before or after oral surgeries and periodontal treatments. This new way for administration of anti-inflammatory compounds could be interesting to avoid side effects derived from oral administration, especially in child or geriatric dentistry treatments. For this goal, electrokinetic and thermodynamic analysis of the adsorption process as a function of concentration, temperature and pH of both anti-inflammatory solutions used has been performed. The results show that the adsorption process fits very well to Langmuir theoretical model, which suggests a monolayer coverage of the adsorbent. The analysis of the thermodynamic functions shows that the adsorbate/adsorbent interaction is spontaneous under the conditions tested. The kinetic study of the process indicates that the interaction follows first order model being the process very fast compared to others carried out using PA 6.6 as adsorbent. The fact that the zeta potential of the fiber is negative in the pH range at which the adsorption is maximum, besides that the reaction seems to be slightly exothermic, could indicate that the process is mainly governed by physical interactions with low activation energy and therefore desorption in physiological conditions could be achieved.

**Recent Publications:**

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2. Giménez-Martín, E., López-Andrade, M., Moleón-Baca, J. A., López, M. A., & Ontiveros-Ortega, A. (2015). Polyamide Fibers Covered with Chlorhexidine: Thermodynamic Aspects. *Journal of Surface Engineered Materials and Advanced Technology*, 5(04), 190.
3. Heilig M, Egli M (2006) Pharmacological treatment of alcohol dependence: Target symptoms and target mechanisms. *Pharmacology and therapeutics* 111:855-876.
4. Moleon, J. A., Ontiveros-Ortega, A., Gimenez-Martin, E., & Plaza, I. (2015). Effect of N-cetylpyridinium chloride in adsorption of graphene oxide onto polyester. *Dyes and Pigments*, 122, 310-316.
5. Giménez-Martín, E., López-Andrade, M., Ontiveros-Ortega, A., & Espinosa-Jiménez, M. (2009). Adsorption of chlorhexidine onto cellulosic fibers. *Cellulose*, 16(3), 467-479.

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Biography

Giménez Martín Elena is a has developed her researching work in the department of physics in Jaén University. The min objective of her investigation is to analyze the evolution of kinetic, thermodynamic and electrokinetic properties of different textile fibers as function of its treatment with different cchemical compounds as dyes, susrfactants some pharmaceutical compounds and inorganic ones as Graphene is. Nowadays interest is focused in deptermination of the interaction responsible of adsorption of anti-inflammatory drugs onto synthetic fiberes with the aim.

egimenez@ujaen.es

Notes: