Biofunctional textiles are materials that exert a biological effect on human skin. Such textiles constitute the basis for the delivery system of cosmetic or pharmaceutical substances when the textile comes into contact with skin. The actives are commonly incorporated in vehicles which may break when the garment rubs the skin allowing the release of the compounds directly in order to be absorbed by the skin. These biofunctional textiles may help, for example, people with sensitive skin, to whom the active substance can slowly be released onto the skin.

In fact, there are already several textile products in the market claiming that they have several properties that are usually found in cosmetics (1), such as moisturizing, slimming, energizing, refreshing, relaxing, vitalising, UV protecting or just simply perfumed. There is a real need to develop test methods to check the effectiveness and durability of the claimed properties (2).

Active principle microencapsulation not only solves the problems of drug intake but also controls their dosage. In this study, the development of a protocol for the microencapsulation of gallic acid by solvent evaporation method was carried out. The antioxidant gallic acid (GA) has been applied to cotton (CO) and polyamide (PA) through microspheres prepared with poly-ε-caprolactone (PCL). PCL-microspheres are used as a vehicle for GA textile application to study the drug delivery. PCL behaves as a biocompatible material and is used as biodegradable sutures. Therefore, it is a suitable material for the transport of drugs, such as GA. Previous work demonstrated the reservoir effect of the biofunctional textile with GA vehiculized with microspheres (3). Besides, the antioxidant capacity of these textiles was also verified (4).

Therefore, a subsequent application of those microencapsulates to biofunctional textile substrates (CO, PA) using a finishing process was done. Finally a study of the release of active principle in physiological serum has been carried out using samples of the treated fabrics that were submerged into a thermostatted vessel at semi-infinite bath conditions. If a thin tissue of a polymer is placed in liquid water or water vapour at static pressure, then both the diffusion coefficient and solubility of water within the polymer can be determined by following mass uptake of water as a
function of time (5). Previous works had been done with ibuprofen in microspheres to study their drug delivery behavior in a semi infinite bath (6) and into skin (7). The determination of active principles released to the bath was performed by HPLC. These experimental results have been analyzed and evaluated. The kinetic study carried out has allowed determining the drug delivery behaviour for all systems in each medium. Therefore, it allowed defining a controlled drug release system by Fickian diffusion in different media.

References
