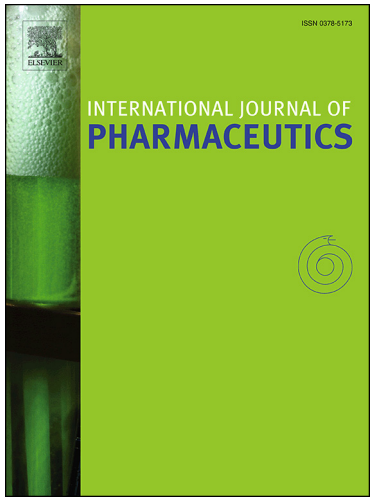

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Milena Ignatova, Nevena Manolova, Iliya Rashkov, Nadya Markova

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Antibacterial and antioxidant electrospun materials from poly(3-hydroxybutyrate) and polyvinylpyrrolidone containing caffeic acid phenethyl ester – "in" and "on" strategies for enhanced solubility

Milena Ignatova[a,*], Nevena Manolova[a,*], Iliya Rashkov[a], Nadya Markova[b]

[a]*Laboratory of Bioactive Polymers, Institute of Polymers, Bulgarian Academy of Sciences, Acad. G. Bonchev St, Bl. 103A, BG-1113 Sofia, Bulgaria*

[b]*Institute of Microbiology, Bulgarian Academy of Sciences, Acad. G. Bonchev Bl. 26, BG-1113 Sofia, Bulgaria*

[*] Corresponding authors: Tel.: +359 (0)2 9793289; fax: +359 (0)2 8700309.

E-mail address: ignatova@polymer.bas.bg (M. Ignatova), manolova@polymer.bas.bg (N. Manolova)

ABSTRACT

Caffeic acid phenethyl ester (CAPE) possesses a set of valuable biological properties: antioxidant, antibacterial, antitumor, anti-inflammatory, antiviral, etc. However, CAPE is poorly soluble in aqueous environment which is limiting its possible therapeutic applications. In the present study novel fibrous materials enhancing CAPE solubility and accelerating CAPE release were developed. The materials were prepared from poly(3-hydroxybutyrate) (PHB) by electrospinning and by electrospinning combined with dip-coating. The effects of the composition - without/with addition of polyvinylpyrrolidone (PVP) and of the design of fiber (CAPE in the bulk of the fiber or incorporated in the PVP coating) on some of the properties of these materials were studied. X-ray diffraction and differential scanning calorimetry analyses revealed that CAPE