



Effect of Electron-Beam Irradiation on Bacterial Cellulose Membranes Used as Transdermal Drug Delivery Systems

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Multiple methods are used to modify material surfaces. Radiation is an effective tool for polymer surfaces modification in order to obtain transdermal systems with different controlled release properties [1]. Bacterial cellulose is a promising biomaterial synthesized by *Acetobacter xylinum* [2, 3]. It has a distinctive ultrafine reticulated structure that may become a perfect matrix as an optimal wound healing environment [4]. In this work, high energy irradiation (γ rays from ^{137}Cs) was applied to modify bacterial cellulose membranes. The effect of varying irradiation doses on membranes permeability was studied. Tetracycline was involved in the study of diffusivity as model drug. Release and permeation of drug from irradiated and non-irradiated membranes were done using a diffusion cell. The membrane permeability was determined using a pseudo-steady state analysis based on Fick's law [5].

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