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Novel alginate-chitosan aerogel fibers for potential wound healing applications

Vanessa S.S. Gonçalves[1,2,3], **Liliana Rodrigues**[1,2], **Joana Poejo**[1,2], **Pavel Gurikov**[4], **Ana A. Matias**[1,2], **Irina Smirnova**[4] and **Catarina M.M. Duarte**[1,2]

[1]Instituto de Tecnologia Química e Biológica António Xavier, Universidade Nova de Lisboa, Av. Da República, 2780-157 Oeiras, Portugal;
[2]iBET, Instituto de Biologia Experimental e Tecnológica, Apartado 12, 2780-901, Oeiras, Portugal;
[3]Escuela de Ingenierías Industriales, Universidad de Valladolid, C/Dr. Mergelina s/n 47011 Valladolid, Spain;
[4]Institute of Thermal Separation Processes, Hamburg University of Technology, Eißendorferstr. 38, 21073 Hamburg, Germany

Wound healing it's a complex and dynamic biological process. In recent years, the development of new wound dressing products from marine sources is gaining increased interest due to their unique properties such as antimicrobial activity (e.g. chitosan) or the capacity to provide a moist environment (e.g. alginate). Moreover, aerogels are porous structures with large surface area in which it is possible to achieve high drug loadings. In this work, newly alginate-chitosan aerogel fibers for wound healing application were prepared by emulsion-gelation method and further dried with supercritical CO2. The morphology and specific surface area of the final fibers were studied by scanning electron microscopy and Brunauer–Emmett–Teller method, respectively. Furthermore, menthol, a monoterpene with antimicrobial activity, was loaded into the fibers by supercritical adsorption and quantified by gas chromatography analysis. Finally, the antimicrobial activity of alginate-chitosan fibers and alginate-chitosan fibers loaded with menthol were evaluated and its possible cytotoxicity was studied using human fibroblasts.

Biography

Vanessa Gonçalves has completed her integrated master degree in Pharmaceutical Sciences in 2010 at University of Lisbon. She is currently a PhD co-tutela student at ITQB-UNL/iBET and University of Valladolid with the thesis "Overcoming CNS-barriers by the development of hybrid nanostructured systems for nose-to-brain drug delivery using precipitation clean technologies". Her current interests are - Supercritical Fluids/High Pressure Processes, - the development of multilayered and hybrid particles, with strong mucoadhesive properties as drug delivery systems for nose-to-brain administration and - aerogels as drug delivery systems.

vgoncalves@ibet.pt

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