

CARBOHYDRATES AND RADIATION: TOGETHER THEY WORK

M. H. Casimiro^[a,b], J. P. Leal^[c,d]

^[a] Departamento da Química, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, 2829-516 Caparica, Portugal, maria.casimiro@dq.fct.unl.pt

^[b] Unidade de Física e Aceleradores, Instituto Tecnológico e Nuclear, 2686-953 Sacavém, Portugal, casimiro@itn.pt

^[c] Unidade de Ciências Químicas e Radiofarmacêuticas, Instituto Tecnológico e Nuclear, 2686-953 Sacavém, Portugal, jpleal@itn.pt

^[d] Centro de Química e Bioquímica, Faculdade de Ciências da Universidade de Lisboa, 1749-016 Lisboa, Portugal, jpleal@fc.ul.pt

Chitosan is a biocompatible and biodegradable polysaccharide with an unusual combination of biological activity plus physical and chemical properties, which makes it an important biomaterial for environmental, pharmaceutical and biomedical applications. The work now presented is based on already published data¹⁻³ and on new ones, and concerns the development of biocompatible and microbiologically safe chitosan based polymeric films, which could simultaneously work as wound dressing and support in drug delivery systems.

The films were obtained by γ radiation induced polymerization, after which they had been characterized in order to investigate its application as support in drug delivery systems. Based on microbe inactivation studies and modification of some functional properties the possibility of simultaneous membrane preparation/sterilization was also explored. Obtained data display values within acceptable range of biocompatibility and microbiological safety, as well as a fast drug release kinetic (which is dependent on reticulation degree due γ irradiation, composition and films thickness).

Results point out to a set of biological, physical and chemical properties which allow concluding that the application of the prepared films as “ready to use” drug release system is viable.

¹ M.H. Casimiro, J.P. Leal, M.H. Gil, *Nucl. Instr. and Meth. B* **2007**, 265, 406-409.

² M.H. Casimiro, J.P. Leal, M.H. Gil, *Nucl. Instr. and Meth. B* **2005**, 236, 482-487.

³ M.H. Casimiro, Botelho, M. L., J.P. Leal, M.H. Gil, *Rad. Phys. Chem.* **2005**, 72, 731-735.