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## WOUND HEALING EFFECTS OF NEW MEMBRANES-BASED CHITOSAN, HYALURONIC ACID AND ARGININE DERIVATIVES

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The skin and soft tissue injuries, such as burn, ulcer or other traumatic damages, represent a major health care problem in the entire world, regarding the success of the therapy and the cost associated. Although several wound dressings materials have been developed, the problem of the wounds management is far from being solved. The big challenge of the wound treatment remains promoting a faster wound healing and reducing the incidence of bacterial infection. The goal of this study was the development and the evaluation of the healing effects of new polymeric membranes based on chitosan (CS), hyaluronic acid (HA) and new arginine derivatives (ArgD, 6a-j). Two types of polymeric membranes: CS-ArgD and CS-HA-ArgD have been developed and characterized. The most proper membranes, in terms of porosity and swelling degree as well as antioxidant and antimicrobial effects, were tested for healing effects on burn wound model induced to rats. The best results were obtained for chitosan-arginine derivatives membranes (CS-6j, CS-6i) and chitosan-hyaluronic acid-arginine derivative membrane (CS-HA-6h). For these membranes, the re-epithelialization was completed with lower values of damaged tissue zone diameter after 15 days of the experiment, compared to the control. All correlated data of this study show that developed novel chitosan-arginine derivatives and chitosan-hyaluronic acid-arginine derivatives membranes are potential materials for wound dressing, with evident beneficial effects in burn wound healing.

### Recent Publications:

1. J G Powers, C Higham, K Broussard and T J Phillips (2016) Wound healing and treating wounds: chronic wound care and management. *J. Am. Acad. Dermatol.* 74(4):607-625.
2. I Bano, M Arshad, T Yasin and M A Ghauri (2017) Chitosan: a potential biopolymer for wound management. *Int. J. Biol. Macromol.* 102:380-383.
3. K Vowden and P Vowden (2017) Wound dressings: principles and practice. *Surgery.* 35(9):489-494.
4. V Patrulea, V Ostafe, G Borchard and O Jordan (2015) Chitosan as a starting material for wound healing applications. *Eur. J. Pharm. Biopharm.* 97 (Part B):417-426

### Biography

Lenuta Profire is a Professor of Pharmaceutical Chemistry, Faculty of Pharmacy, Grigore T Popa University of Medicine and Pharmacy, Iasi, Romania. She received her PhD in 1991 with the thesis research concerning synthesis of new bioactive xanthine derivatives. Since 2016 she is Dean of Faculty of Pharmacy at the university. She is Member of the scientific and professional organizations and has managed several national and international research projects. Other important achievements: PhD Supervisor (since 2008), Director of Doctoral School (2012-2016), Member of Doctoral School Council (2012-present), Member of the National Council for Attesting University Titles, Diplomas and Certificates (2011-2012, 2016-present). Her research interest includes: improving the pharmacological and pharmacokinetic profile of the biological active compounds and drugs using biopolymers as delivery systems (based on chitosan, chitosan/hyaluronic acid, chitosan/xanthan, cellulose/chondroitin sulphate); design and characterization of new biological active compounds focused on new heterocycle derivatives (based on xanthine, thiazolidine-4-one, pyrazolin-5-one, azetidin-2-one, aminoacids scaffold) and their biological evaluation (antimicrobial, antioxidant, anti-inflammatory, antidiabetes effects).

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