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## Study on different penetrability of nano- and microparticles

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Drug delivery system represent an improved method used to deliver many drugs with a higher biodisponibility. Most of these carriers are based on nanoscale particles, tubes, dendrimers, etc. In this study, polyurethane structures with and without 2,4-dinitrochlorobenzene (DNCB, an organic compound used as reference agent to cause contact dermatitis) were synthesized using an interfacial polyaddition combined with a spontaneous emulsification. The obtained nano- and micro-structures were characterized by solubility tests, aqueous solutions' pH, thermal analysis, SEM, and ultraviolet-visible absorption spectroscopy. The yield of encapsulation of DNCB inside nano- and micro-structures was evaluated using HPLC/MS analysis. Three different sizes of polyurethane structures were obtained:  $72\pm 7$  nm,  $348\pm 12$  nm, and  $1287\pm 31$  nm; the samples were almost homogeneous, with a polydispersity index around 0.2 units, and a medium stability (Zeta potentials around +23 mV). The polymer structures with elongated shapes present a better solubility in organic solvents, and at pH values between 6.1 and 7.3. *In-vivo* evaluations of skin parameters, such as transepidermal water loss, mexametry (assessment of erythema level and melanin content) and corneometry (hydration level of skin surface), were done using SKH1 hairless mice. The results suggest that nanostructures have a similar effect as DNCB which can be associated to a high degree of skin penetrability.

## Biography

Melania F Munteanu has completed her PhD from University of Medicine and Pharmacy, Targu Mures (Romania). She is a Lecturer of Vasile Goldis West University, Arad (Romania), Health and Environmental Chemistry discipline – Pharmacy Department. She has published more than 20 papers in reputed journals.

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