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Titolo	Polymer-based drug delivery systems: a study on micro and nanoparticles as carriers for bioactive molecules [Tesi di dottorato]
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Note	In relazione con CHIM/09;
Sommario	<p>Dottorato di Ricerca in Life Sciencesf. Ciclo XXXI The works presented in this book are the result of the research carried out by the candidate, Luca Scrivano, during his 3 years Ph.D. at the Department of Pharmacy, Health and Nutritional Sciences of the University of Calabria (IT). His research was focused on the development of polymeric materials for the preparation of nanosized and micrometric drug delivery systems. Many strategies were explored and four different categories of polymeric particles were investigated: molecularly imprinted polymers, polymer-drug conjugates, polymeric vesicles and polymeric micelles. Both natural and synthetic polymers were employed for the development of these particles. The thesis is divided in two sections: Part I is focused on molecularly imprinted polymers (MIPs) as drug delivery systems. After a brief introduction about molecular imprinting technology in Chapter 1, the classic approach for the synthesis of MIPs for the delivery and release of an anticancer drug, namely sunitinib, is reported in Chapter 2. In Chapter 3, instead, a novel strategy for the synthesis of molecularly imprinted microrods through mesophase polymerization is presented. Finally, the use of diclofenac imprinted polymers for the production of hybrid smart bandages is described in Chapter 4. Part II is focused on nanosystems for the delivery of</p>

poorly water soluble drugs. Three different systems are presented in this section (and a short introduction is given in Chapter 5): a polymer-drug conjugate, a polymeric vesicle and polymeric micelles. For the polymer-drug conjugate reported in Chapter 6, sericin was used as starting material and sunitinib as drug substance. To achieve the final product, a click chemistry approach was applied, based on free radical grafting in aqueous solution. Oleate functionalization of dextran, described in Chapter 7, was carried out to prepare self-assembled polymeric vesicles, for the delivery a new antibacterial agent, synthesized by the group of medicinal chemistry of the Department of Pharmacy, Health and Nutritional Sciences of University of Calabria. Research on polymeric micelles for the targeted delivery of a photosensitizer for application in photodynamic therapy, reported in Chapter 8, was carried out at the Department of Pharmaceutical Sciences of Utrecht University (NL), under the supervision of Prof. Wim Hennink, Dr. Cornelus F. van Nostrum and Dr. Sabrina Oliveira, during the last seven months of the Ph.D. course. In the attempt to explore the wide world of the drug delivery systems, polymeric carriers were chosen exclusively for the investigation carried out by the candidate. Among them, only the systems which may offer great advantages, such as stability, controlled release, high loading capacity and improved solubility of hydrophobic drugs, were selected. But alongside with the advantages are the disadvantages: in the Conclusions is, indeed, reported that all the good qualities can never be found in only one system and that the selection of the polymeric carrier must be done carefully, by taking into account the physical-chemical properties of the drug and the physio-pathological characteristics of the diseased tissue, target site of the bioactive compounds

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