UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
“CAROL DAVILA” BUCUREȘTI
ȘCOALA DOCTORALĂ
DOMENIUL FARMACIE

CERCETĂRI PRIVIND DEZVOLTAREA ȘI EVALUAREA UNOR SISTEME DE ELIBERARE A SUBSTANȚELOR ACTIVE CU PERFORMANȚE TERAPEUTICE ÎMBUNĂTĂȚITE

REZUMATUL TEZEI DE ABILITARE

CANDIDAT:
Conf. univ. dr. HÎRJĂU Mircea
Universitatea de Medicină și Farmacie „Carol Davila” București,
Facultatea de Farmacie

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Thesis Abstract

The habilitation thesis entitled **"Research on the development and evaluation of drug delivery systems with improved therapeutic performance"** is aimed to highlight my main scientific, professional and academic research activity and contributions after the completion of the PhD thesis (in September 2011), entitled *"Application of extrusion / spheronization technology in the manufacture of pellets with non-steroidal anti-inflammatory substances"* – scientific advisor Prof. Ph.D. Lupuliasa Dumitru, U.M.F. „Carol Davila" Bucharest. For this purpose, the thesis is organised and divided into four main sections: Academic Activity, Professional Achievements, Scientific Activity and Further development of the Academic career.

The first section illustrates my **academic and professional activity**, covering the 20-year period of academic activity at the Faculty of Pharmacy in the field of Pharmaceutical Technology, which was fundamentally aimed at high-quality knowledge transfer to both undergraduate and postgraduate students. This is demonstrated by the numerous teaching materials to which I have contributed: *first author* for 1 book, *coordinating author* for 2 books, *co-author* for multiple books (including 3 chapters in 2 comprehensive scientific treatises on pharmaceutical technology), of which some have received awards for outstanding editorial achievements. I have also been the *scientific advisor* for more than 50 licence theses and various student's scientific works. My contribution to expanding the educational offer by proposing new postgraduate courses for pharmacists, as well as presentations held at scientific events, should also be noted. From 2010, I have joined The National Agency of Medicines and Medical Devices (ANMDMR), the competent authority which surveys the safety of medicinal products for human use in Romania, as an *expert assessor on the marketing authorisation dossier* regarding the quality of drug products. This collaboration has had a significant contribution to my professional training, complementing the academic performance with an invaluable experience related to the way in which drug products that reach the pharmaceutical market are developed and evaluated.

The interest in pharmaceutical scientific research is illustrated by the activity in multiple research projects, for two of which I have held the position of project manager. The participation as member of research teams in 14 CEEX, PNCD I or PNCD II research projects has offered the opportunity for the collaboration with researchers from of

multidisciplinary teams with valuable scientific activity, further contributing to the development of a robust academic profile. The research results have been disseminated in the form of published articles in ISI-quoted (17 articles) or IDBs indexed (11 published papers since the defence of the Ph.D. thesis) journals.

The main part of this habilitation thesis consists of the section describing the most relevant **scientific achievements**, which were focused on four principal directions.

Based on the theoretical and practical expertise after the completion of the Ph.D. thesis, *the first postdoctoral scientific research direction* which was advanced was aimed at *the development, optimization and evaluation of multiparticulate drug delivery systems*. This direction addresses the development and optimization of several types of multiparticulate drug delivery systems (capsules including pellets, respectively MUPS tablets), which are modified-release dosage forms by excellence. As many of the currently marketed drug products include class II BCS drugs, poorly water-soluble drug substances were employed as model drugs in these studies as well, attempting to study the drug release mechanisms of such delivery systems and overcome the limitations of conventional-release dosage forms containing such substances. Some of the studies were supported by a research project for which I was project manager. Also, some of the obtained results were the basis of a patent granted by the national State Office for Inventions and Trademarks (OSIM) and were published as 4 articles in ISI-listed journals.

A second direction of scientific research interest which I have developed was the development and evaluation of new topical dosage forms, seeking to improve their therapeutic performance. Some of these studies were funded by a research project (contract no. PFE_23/2018), in which I have participated as project manager. These studies were focused on increasing the percutaneous penetration of poorly water-soluble drugs from new topical semisolid dosage forms by various strategies and on the study of rheological behaviour of semisolid dosage forms and its impact on the drug release. Some results were published as four articles in ISI-listed journals.

The third research direction, ”*Formulation, manufacture and characterization of novel dosage forms*”, includes the results obtained in various studies regarding less usual dosage forms, such as orodispersible tablets or mucoadhesive laminates. Also, within this research direction, some studies carried out in collaboration with various disciplines from our Faculty were aimed at the development and evaluation of some dermato-cosmetic preparations including functional phyto- and biocosmetic active ingredients. The results were presented

as an important number of poster or oral presentations at scientific national and international events and published *in extenso* in the Proceedings volumes.

The fourth research direction – ”*Interdisciplinary research*” – further illustrates my interest and commitment for professional collaborations. The studies, carried out by interdisciplinary and inter-faculty working groups, were aimed at investigating the potential antimicrobial activity of some newly synthetised compounds, as well as at the evaluation of the susceptibility to antibiotics of some microorganism strains isolated from odontogenic infections or from vestibular abscesses. The results were disseminated as three articles published in ISI-listed journals.

The plan for future development of my professional, scientific and academic activities is described in the third chapter of this habilitation thesis. Some of the short, medium and long-term objectives for academic profile improvement include attracting funds by submitting projects to national and international programs, stimulating the exchange of ideas and establishing new collaborations by participating in scientific events, identifying new and engaging research topics of common interest for both academia and private sector and constantly improving the quality of the academic activity by applying new teaching methods and developing and enhancing the learning resources.