

SUMMARY

The habilitation thesis “Contributions to the study of development, optimization and release behavior of pharmaceutical forms and synthesis of compounds of pharmaceutical significance” includes some of the results of my scientific and educational activity after the public defense of the doctoral thesis as well as the future development plans.

As per University recommendations, this thesis is structured in four main parts: the scientific research section, which includes the original results from the studies undertaken since the defense of the PhD thesis; the educational section, the administrative section, the professional development and future goals section.

The first section therefore showcases the scientific research. The main approached themes are:

- Study and development of monoparticulate solid oral dosage forms
- Study and development of hydrophilic matrix modified release tablets
- Experimental design techniques
- Tablet coating development and optimization
- Biopharmacy aspects of drug development, including in vitro and in vivo studies
- Synthesis, characterization and biological evaluation of drug molecule candidates, especially pentaatomic heterocyclic systems and condensed heterocyclic systems.

These themes come together under the larger umbrella of experimental design. In a modern study, be it either the description of an unexpected behavior, a prospective or retrospective study, an optimization or a synthesis, the hypothesis and conditions are very carefully described and tested. In order to do such a significant testing, the experimental phase space has to be narrowed quite a lot from the total possible phase space. The more complex a process is, the less likely is to find and define an exact decision tree in order to move the experiment from the initial state through the whole phase space to the desired endpoint.

This thesis showcases a number of research papers, whose design lean either towards screening, optimization or synthesis endpoints. By exploring the phase space, unexpected behavior was sometimes reported, optimums were predicted and checked, and systems' behavior was checked against popular models.

The multi-disciplinary approach is proven by the wide range of themes and collaborations with other disciplines in the Faculty, in the University or in other universities.

Lateral to the experimental design are other areas of interest, springing from past activities such as regulatory affairs and patient communication.

Some of the research themes were developed by means of research contracts received by competition, such TC 28328/04.11.2013 (project director) and 7301/023/2010 as part of POSDRU/89/1.5/S/64109.

The published research volume is of 31 ISI articles, with a H-index of 7, and 260 citations, according to Scopus database. I was a principal author in 13 of these articles, with a combined principal author impact factor of 16.702.

The second section showcases the educational activities: teaching – lectures and laboratories, educational material development, student guidance.

The third section presents the professional development: professional development lectures and workshops, administrative positions and positions in commissions and committees.

The fourth section concerns future planning, from scientific and educational points of view. We can see now that the big data combined with artificial intelligence is a black swan type event that has the potential to change the pharmaceutical profession even more than the last two-three decades did already. Therefore, planning for this future is very important, both from a scientific and educational perspective.

A handwritten signature in black ink, consisting of a large, stylized initial 'P' followed by a series of loops and a final flourish.