

**UNIVERSITY OF MEDICINE AND PHARMACY**

**"CAROL DAVILA" BUCHAREST**

**DOCTORAL SCHOOL**

**PHARMACY FIELD**

**INVESTIGATION OF THE THERAPEUTIC  
POTENTIAL OF SOME SPECIES AND OF SOME  
NEWLY SYNTHESIZED CHEMICAL COMPOUNDS**

**Abstract of the habilitation thesis**

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## Abstract

*"Investigation of the therapeutic potential of some species and newly synthesized chemical compounds"* is my habilitation thesis. It contains the most important outcomes of my professional activity after finishing my doctoral studies, which were completed in 2012 with the defence of a thesis entitled *"Research on the valorisation of some plant products with potential action in the pathology of diabetes"* (prepared under the guidance of Prof Dr Viorica Istudor) and with the receipt of a PhD in Pharmacy in 2013.

This paper has four parts: scientific activity, academic and professional activity and achievements and academic career development plan.

My main research areas were:

- the morpho-anatomical, physico-chemical and pharmacological characterisation of plant products with therapeutic potential;
- the phytotherapeutic exploitation of new plant resources in the therapy of metabolic diseases and allergic dermatoses;
- the investigation of the relationship between the active principles of plants and pedoclimatic factors;
- the phytobiological testing of newly synthesised substances with potential therapeutic action.

My first research area primarily focused on dicotyledonous but also covered monocotyledonous plants. They were investigated by several microscopy techniques (optical, digital, electronic) to establish identity based on known characters and to identify any features likely to assist in further research.

Wild or cultivated plants for food or decorative purposes from various families were investigated to capitalize on their therapeutic potential in relation to metabolic diseases or in allergic dermatoses. The research aimed to obtain lyophilized extracts by characteristic methods and to determine the content of active principles by chromatographic methods. Species from the families Lamiaceae, Asteraceae, Brassicaceae, Amaranthaceae were investigated for antidiabetic potential. Plants from the families Moraceae, Rosaceae, Plantaginaceae, Asteraceae, Adoxaceae were investigated for their potential in allergic dermatitis therapy.

The investigation of the relationship between the active principles (polyphenols, flavones) of some plants from the families: Rosaceae (e.g. Malus, Sorbus genera),

Myrsiniaceae and pedoclimatic factors constituted my third research area. For species from the families Umbelliferae, Urticaceae, Lamiaceae, Asteraceae, Plantaginaceae, Acoraceae, the variation of the content of iron, polyphenols and flavonoids in different plant organs was observed depending on soil type and plant development stage.

An important part of my research was the use of specific methods to determine the toxicity of plant extracts or of newly synthesized chemical compounds.

Models based on plant organisms from two species of monocots *Triticum aestivum* and *Hordeum vulgare* were used to determine cytotoxicity and genotoxicity. Two dicotyledonous species *Lactuca sativa* and *Cucumis sativus* were also used as models.

Cytotoxicity on invertebrate animal organisms was tested using the *Artemia* model. The phytotoxicity of some 4(3H)-quinazoline derivatives, compounds with 1,3,4-oxadiazole core, thiourea derivatives, heterocyclic compounds with pyrrole core was investigated via the *Triticum test*.

My research has been presented at national and international scientific events and has been published in full-text ISI or BDI articles. As an author or co-author, I have published 23 articles indexed in Clarivate / Web of Science with IF and four articles in other publications after obtaining my PhD. I have attended international and national scientific events with papers published in their abstract volumes. I have also been a team member in three research projects and am listed as one of the inventors on three granted patents and a pending patent application.

The quality of my research results is also confirmed by awards obtained at various scientific events and UEFISCDI competitions.

My academic teaching activity commenced in 2007, when I took up the role of assistant professor in the discipline of Pharmaceutical Botany and Cell Biology within the Faculty of Pharmacy of UMF "Carol Davila" Bucharest. It has continued with the position of lecturer within the same discipline, which I have held since 2015.

The second part of my habilitation thesis showcases my teaching responsibilities and activities (preparation and delivery of lectures, supervision of practical work, development of teaching materials, supervision of degree theses, coordination of students' research).

Chapter three sets out the postgraduate training courses I have completed. These contributed to my professional development and furnished me with an interdisciplinary outlook (areas: phytochemistry, phytotherapy, pharmaceutical biotechnology, inorganic chemistry, organic chemistry, toxicology, pharmaceutical regulation, informatics).

The last chapter briefly outlines my research and academic development goals. In my teaching activity, I will continue to guide students to ensure their academic performance increases via research involvement.

My other objectives are participation in research alongside the discipline's team by accessing research and development projects in national and international competitions (grants), attracting national and international high-ranking individuals in the research activity of the department, collaboration with researchers from the faculty and other research centres or universities. Research results will be published in IF journals and disseminated via scientific events, which will increase the visibility and recognition of UMF "Carol Davila".