



UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE „CAROL DAVILA“ DIN BUCUREȘTI

FACULTATEA DE FARMACIE



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UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE

„CAROL DAVILA” BUCUREȘTI

ȘCOALA DOCTORALĂ

DOMENIUL FARMACIE

**Cercetări morfo-anatomice, fitochimice, toxicologice și farmacologice
asupra unor specii din flora spontană și cultivată**

REZUMATUL TEZEI DE ABILITARE

CANDIDAT:

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Disciplina Botanică farmaceutică și Biologie celulară

Facultatea de Farmacie

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Abstract

The habilitation thesis entitled "Morpho-anatomical, phytochemical, toxicological and pharmacological investigations on species of wild and cultivated flora" comprises my postdoctoral research after 2008. It is organized in 4 chapters corresponding to teaching, professional and scientific activities.

The first chapter presents the teaching activity in the discipline of Pharmaceutical Botany and Cell Biology consisting of lectures and seminars for first and second year students, coordination of undergraduate papers and papers presented at student communication sessions, co-authorship of student books.

The second chapter covers the professional activity marking the graduation from the Faculty of Pharmacy in 2000, admission as a resident pharmacist in 2002, specializing in General Pharmacy, obtaining the title of specialist pharmacist in 2004 and primary pharmacist in 2009. Also mentioned is the completion of several postgraduate courses, membership in 5 professional associations and participation as secretary or member in the committees of licensing, residency and promotion competitions.

The third chapter refers to postdoctoral scientific achievements, which include 21 ISI papers, of which 11 as lead author, 31 papers presented at various national and international scientific events, 4 patents, 1 patent application, 5 awards, participation in 3 research projects as member of the collectively and as a project manager at one. This chapter presents the 4 main directions of postdoctoral research. The first is to carry out morpho-anatomical studies to verify the identity and botanical characterization of plant species from wild and cultivated flora: *Abutilon theophrasti* Medik., *Linaria vulgaris* Mill., *Tecoma radicans* (L.) Duhamel, *Rubus idaeus* Blanco, *Rubus caesius* Thunb., *Silene latifolia* Poir., *Bryophyllum pinnatum* (Lam.) Oken, *Centaurea nigrescens* Gren.&Godr, *Centaurea stoebe* Ten, *Chaenomeles japonica* (Thunb.) Lindl.exSpach, *Calluna vulgaris* (L.) Hill, *Ziziphus jujuba* Mill., *Amorpha fruticosa* L., *Crepis setosa* Haller f. Anatomical studies were carried out by photon and electron microscope on root, stem, leaf and flower. The second direction consists in the phytochemical characterization of various plant extracts (*Prunus persica* (L.) Batsch, *Amorpha fruticosa* L., *Ziziphus jujuba* Mill., *Mentha x piperita* L., *Petroselinum crispum* (Mill.) Fuss, *Abutilon theophrasti* Medik., *Amaranthus retroflexus* L., *Helianthus tuberosus* L., *Ailanthus altissima* Mill., *Arbutus unedo* L., *Tagetes patula* L., *Urtica dioica* L., *Acorus calamus* L., *Malus Perpetua* (L.) Everest). Flavones, ascorbic acid, polyphenols and iron compounds were analysed by advanced laboratory



techniques (HPLC, RP-HPLC, HPLC-DAD, Ultra-High-Performance Liquid Chromatography Electro spray Ionization Tandem Mass Spectrometers, atomic absorption spectrometry). The third direction was the production of two phytopreparations for topical use, two ointments, one lipophilic and the other hydrophilic, with healing and anti-inflammatory effects. The preformulation studies, the production of the ointments, the physico-chemical characterization of these products, the evaluation of the skin tolerability and of the healing and anti-inflammatory potential in animal models (mouse, rat, rabbit) were carried out within the framework of a research project, an internal grant carried out in 2014-2016 of which I was the director. The research resulted in 3 ISI articles as lead author, an award-winning BDI article and a patent for the lipophilic ointment. The fourth line of research brought together studies to determine the cytotoxicity of newly synthesized organic compounds (1,3,4-oxadiazole compounds, new thiourea derivatives) and plant extracts (*Abutilon theophrasti* Medik., *Prunus persica* (L.) Batsch, *Amorpha fruticosa* L., *Ziziphus jujuba* Mill., *Hyacinthus orientalis* L., *Panax notoginseng* (Burkill) F.H.Chen, oat bran, *Amaranthus retroflexus* L., *Ailanthus altissima* Mill., *Helianthus tuberosus* L., *Arbutus unedo* L., *Cotoneaster* sp., *Zantedeschia rehmannii* Engl., *Rubia tinctorum* L., *Rheum rhabarbarum* L., *Withania somnifera* (L.) Dunal *Glycyrrhiza glabra* L., *Malus Perpetu*® *Evereste*, *Anemone nemorosa* (L.) Holub, *Malus sylvestris* (L.) Mill.) on the plant cell by the phytobiological method, Triticum test.

The habilitation thesis also includes a series of smaller studies aimed at determining the antioxidant activity of some plant extracts (*Medicago sativa* L., *Trifolium pratense* L., *Vaccinium myrtillus* L., *Ginkgo biloba* L., *Arbutus unedo* L.), their acute toxicity (*Ziziphus jujuba* Mill., *Panax notoginseng* (Burkill) F.H.Chen and oat bran) and their influence on blood parameters in laboratory animals (rats) (*Ziziphus jujuba* Mill.).

The last chapter proposes a plan for academic, teaching, professional and scientific career development. In this regard I will continue to participate in scientific events, publish scientific articles addressed to medical and pharmaceutical professionals, and file new patents. I will develop the research directions addressed so far, but also some innovative ones (formulation and preparation of nanocomplexes with plant extracts and silver or cyclodextrins).