

**“CAROL DAVILA” UNIVERSITY
OF MEDICINE AND PHARMACY BUCHAREST
DOCTORAL SCHOOL
PHARMACY DOMAIN**

**VALORIZATION OF THE THERAPEUTIC
POTENTIAL OF SOME ORGANIC, INORGANIC
AND NATURAL COMPOUNDS
THE HABILLITATION THESIS ABSTRACT**

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Habilitation thesis "Valorization of the therapeutic potential of some organic, inorganic and natural compounds" summarizes the main scientific, professional and academic achievements obtained in the post-doctoral period. The thesis was conceived on the basis of several scientific publications and was structured in three main parts. In the first part of the habilitation thesis are presented systematically the most numerous achievements in the field of research that I carried out after defending the doctoral thesis, the second section describes personal, professional and academic achievements, and in the last part is presented the academic, professional and research career development plan.

In the first chapter entitled "Scientific achievements", we detailed the main research directions supported by the most important publications, as follows:

- ✓ Creation of databases on the active principles of plant and bee products used in various diseases

Research studies in this research direction aimed at:

- the scientific substantiation of the use in therapy of some plant species based on the correlation between the identified and quantified chemical compounds and the potential induced therapeutic effects;
- proposing new pharmaceutical formulations containing semi-synthetic compounds or standardized extracts in active chemical constituents, as well as establishing their quality norms;
- creation of databases related to plant products / active principles used in different types of diseases

The research activity focused on the systemic approach to the design of herbal medicine, starting with the analysis of plant raw materials, the correlation of the chemical composition with the potentially induced therapeutic effects and the justification based on the scientific basis of the proposed associations.

This research direction is supported by six ISI papers, four patents and one patent application.

- ✓ Biochemical and pharmacotoxicological research on extracts from marine organisms with therapeutic potential

Worldwide there is a growing interest of medical and pharmaceutical professionals in the prevention and treatment of diseases with pharmaceuticals prepared from marine compounds. The use of this raw material generated a research on the degree of pollution of mussels harvested from the waters on the Romanian Black Sea coast, as well as an analysis of heavy metals and organic pollutants from some fish species in the Danube, and an analysis of pollution with heavy metals (cadmium, copper, zinc, lead) and pesticides (lindane, DDE, DDD, DDT) from four species of fish from the Danube River: *Alosa pontica*, *Cyprinus carpio*, *Abramis brama* and *Esox lucius*.

This direction is supported by three ISI articles, two BDI papers and one patent application.

- ✓ Biochemical and pharmacological research of some organic and/or inorganic compounds with therapeutic potential

This research direction focused on the discovery of new substances (β -phenylethylamine and oleamides) with potential action on diabetes and / or obesity and on lipid metabolism. Also in the same direction i watched and antidiabetic potential of some plant extracts evaluated by two hydroethanolic dry extracts obtained from the leaves of *Raphanus sativus* and *Ficus elastic* and actions to hydroethanolic dry extracts obtained from flowers of *Lavandula officinalis* aerial part of *Cirsium arvense* on glucose and serum lipids.

This direction is supported by nine ISI articles and two BDI papers.

- ✓ Food security, from the perspective of nutritional degradation of food

The issue of security and safety is one of the biggest challenges of the contemporary world. Food safety is an important public issue from the perspective of foodborne illnesses caused by chemical contamination, biological contamination and increasing pollution.

The process of chemical contamination of food has effects on the human body, allergenic in nature (caused by antibiotics, preservatives, antioxidants, flavorings), anti-enzymatic (caused by preservatives, pesticides or heavy metals), irritating and keratinizing the mucous membranes (caused by preservatives, oxidants or flavorings).

Starting from the mention in the literature of a possible link between the intake of nitrate compounds in the diet and the incidence of colon pathologies, we tracked the amount of nitrites and nitrates in three categories of meat products sold in our country (conventional, traditional and organic) by comparison with the maximum limit values allowed by current standards. Within

the same direction, we also researched the influence of soil contamination with heavy metals and of vegetal sources, food sources, which develop in the respective area.

This direction is supported by three ISI articles, three BDI articles and 2 books.

The third chapter presents "Plans for the development of academic, scientific and professional activities". Academic activities combine teaching and scientific research to ensure a high quality education. The permanent improvement of the didactic activities is directed toward the modernization of both the theoretical and the practical activities on the specific fields of the didactic disciplines and the encouragement of the new generation to improve their abilities by participating in the scientific research.

The scientific directions that have been described above with significant results will be considered for the future, along with the development of new directions. The main objectives are the development of partnerships in priority areas for the design of innovative products and the development of new technologies in research directions, attracting funding through future projects and disseminating study results by publishing high-impact scientific papers or filing patent applications.

Both academic and scientific activities are correlated with the professional direction, which will be focused on maintaining an active involvement in the socio-professional activities specific to the pharmaceutical community.