

**UNIVERSITY OF MEDICINE AND PHARMACY  
"CAROL DAVILA "  
BUCHAREST  
ROMANIA**

**DOCTORAL SCHOOL**

**FIELD: MEDICINE**



**SUMMARY OF HABILITATION THESIS**

“Endocrine and exocrine pancreatic pathology – from fundamental research to clinical medico-translational implications.”

**CANDIDATE:**

PANTEA STOIAN ANCA MIHAELA, LECTURER,

**UNIVERSITY OF MEDICINE AND PHARMACY "CAROL  
DAVILA "BUCHAREST**

**2019**

The habilitation thesis entitled “Endocrine and exocrine pancreatic pathology – from fundamental research to clinical medico-translational implications” presents the results of my research activity after obtaining the PhD title in 2014 as well as my development and subsequent personal academic, professional and scientific contributions. Moreover, the habilitation thesis outlines and underlines some of my post-doctoral research directions, being structured in five sections: biographical data, scientific research, academic activity, professional activity and the evolutionary and developmental plans regarding my academic career.

The habilitation thesis was prepared following the Order issued by the Ministry of Education and Scientific Research regarding the organization and development of the process of being issued the habilitation certificate no. 312/27.01.2015, published in the Official Gazette, part 1, no. 107/10.02.2015 and other normative documents which specify this procedure: Law 1/2011 (The Law of National Education) with subsequent amendments and completions, the Order of the Ministry of Education, Research, Youth and Sports no. 5644/2012, regarding some organizational and operational measures of CNATDCU, with subsequent amendments; the Order of the Ministry of National Education and Scientific Research no. 6129/2016, regarding the approval of the minimal standards necessary and mandatory for the award of the higher education teaching titles, of research-developmental professional degrees, of the doctoral supervision qualification and the habilitation certificate; the Governmental Decision no. 26/2015 regarding the organization and operation of the Ministry of Education and Scientific Research.

**Chapter 1**, “Biographical data”, comprises two sections and details my professional and academic evolution. This section marks my academic, professional and scientific contributions from the beginning of my career until now. The purpose of this section is mainly to underline the multi- and interdisciplinary impact on my formation and experience. The section includes data about my educational background and highlights previously mentioned recognition and achievements.

**Chapter 2**, “The scientific activity”, thoroughly presents the results of my post-doctoral research activity in the medical field. The chapter comprises more sections, being structured according to the main guidelines of my scientific research, first of all considering the exocrine

and endocrine pancreatic pathology as well as its interdisciplinary medical implications such as diabetes mellitus, nutrition, metabolic diseases, internal medicine, cardiology, oncology, gynaecology, general surgery, nephrology. This multidisciplinary approach allowed me an extensive and integrative scientific activity, and it was the foundation of a complex research methodology. Each section deals separately with the specific scientific activity and corresponds to each stage of my scientific development. Thus, the first subchapter - "Chronic pancreatitis, the central element of the doctoral thesis - approaches the aspects of scientific research tightly connected to the doctoral theme. The second subchapter "Endocrine pancreatic pathology – diabetes mellitus" presents the main topic of the paper and develops all the scientific activity achieved in the field of integrated metabolic pathology and nutrition. The third subchapter "Directions of interdisciplinary scientific research" is also divided into three other subchapters, the main guidelines of interdisciplinary research: Diabetes mellitus, obesity, dietary habits and nutritional intervention in chronic pathology; Diabetes mellitus and cardiovascular pathology; Diabetes mellitus and oncologic pathology.

In terms of uniqueness, chronic pancreatitis is generally characterized by a persistent inflammatory state, interstitial fibrotic lesions leading to the irreversible destruction of the exocrine parenchyma, as well as the late affliction of the endocrine pancreas. It is hard to estimate the time evolution of chronic pancreatitis, on the one hand, due to the insufficient knowledge of the factors involved in pathogenesis, of each patient's susceptibility and the diagnostic means and, on the other hand, due to the fact that the main therapeutic areas are limited by pathology most often unpredictable in its evolution and, last not least, the medical, nutritional intervention which is still the main standardized goal. Another important aspect of the study of this pathology was the analysis of the subgroup of patients with chronic pancreatitis and secondary diabetes mellitus. In the international literature data, the classification of this etiopathogenic form of diabetes corresponds to type 3C pancreatogenic diabetes mellitus, being a special entity which occurs due to the initial impairment of the exocrine pancreas followed by the subsequent impairment of the endocrine one, especially the insulin-secreting Langerhans cell. The treatment is often difficult to achieve, while the classical parameters of monitoring the glycemic state are often insufficient.

As a consequence of these results, I have subsequently tried to find new analytic perspectives of these parameters as well as means of achieving the best monitoring of the glycemic profile and also particular pathological situations that may interfere in the evolution

of the diabetic patient's disease. The identification of HbA1C% (A1C glycosylated hemoglobin) as a fundamental parameter in the monitoring of the diabetic patients has been and still is a personal research topic, in the attempt of finding alternatives and scientific explanations regarding its variability. Glycemic variability is a very important topic in the management of diabetes mellitus. Currently, "the gold standard" in the assessment and monitoring of diabetes mellitus is the quarterly evaluation of HbA1C%, but there are many data in the international literature which demonstrate that it is not enough. Glycemic variability, as well as HbA1C% variability, are true markers of the glycemic control, moreover when there is a high risk of hypoglycemia, as it happens in case of diabetic chronic renal disease. The metabolic syndrome (MS) and the chronic kidney disease (CKD) are already known as public health problems due to the social and economic impact and also due to the increased prevalence of both mortality and morbidity.

Another important aspect of scientific research consisted of the determination of the factors that can trigger the occurrence of diabetes mellitus. Starting from the fundamental research and analysing the toxicological implications of some substances frequently present in many common foods as well as the study of microbiota patterns in diabetic patients, I have managed to develop a new scientific approach in the diagnosis and treatment of diabetes mellitus, the two topics being currently under development.

The study of the micro- and macro-vascular complications of diabetes mellitus represents one of my current scientific preoccupations. Cardiovascular diseases and oncologic pathology, tightly related to diabetes mellitus, as well as a nutritional intervention as the main element of both primary and secondary prevention are the main guidelines of current and future scientific research. The main element studied and developed is chronic oxidative stress and its multidisciplinary implications, which is the "foundation" of all chronic pathologies.

**Chapter 3** details the entire academic activity from the beginning until now, highlighting my contributions to this regard.

**Chapter 4** illustrates the professional activity and details each evolutionary stage. It presents all the stages of my training, courses and Master's programs graduated and explains my permanent preoccupation for interdisciplinarity.

**Chapter 5** presents the main guidelines of my future academic and scientific development, based on my previous activity, but with the potential of international interdisciplinary collaboration.