



**Transilvania University of Braşov**

**HABILITATION THESIS**

**ABSTRACT**

**Title: CARDIOVASCULAR PATHOLOGY FROM RESEARCH  
TO CLINICAL PRACTICE AND INTEGRATIVE MEDICINE**

**Domain: MEDICINE**

**Author: Assoc. Prof. ELENA BOBESCU  
TRANSILVANIA UNIVERSITY OF BRASOV**

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## ABSTRACT

The habilitation thesis "Cardiovascular pathology from research to clinical practice and integrative medicine" includes my scientific, professional and academic achievements, evolution and development plans.

**The first section** of this thesis includes the main results of professional, academic and research activities, in close correlation with the level of knowledge in the fields of research, being mentioned the most important scientific articles, research grants obtained in competition, clinical trials, national and international registers. The stages of my professional career development are covered chronologically.

**Chapter 1** presents the main results of scientific research systematized on the main areas of research: oxidative stress, platelet reactivity, integrative medicine and other areas of research were also summarized.

The first domain of research is oxidative stress. It's involvement in cardiovascular pathology is one of the research topics which I studied since of the beginning of my career. This domain integrated: the PhD thesis entitled: "Oxidative stress in acute coronary syndromes"; the project won at PN IDEI 2008 competition entitled: "Evaluation of the effectiveness of therapeutic agents with complementary mechanisms to reduce oxidative stress, platelet activation and procoagulant status in acute coronary syndromes"; the published book entitled: "Oxidative stress in coronary syndromes". A large part of my research activity and scientific papers addressed to this topic of great scientific interest, were published and communicated at national and international level, in journals with great scientific impact.

The predictive value of risk factors, additional markers and the effectiveness of pharmacological treatment in reducing cardiovascular risk in patients with coronary heart disease were highlighted. The importance of oxidative stress and the evaluation of antioxidant systems in cardiovascular diseases were also been described. Another aspect was the effectiveness of drugs with antioxidant potential in reducing oxidative stress correlated with reducing the incidence of cardiovascular events, better control of blood pressure, preservation of cardiac and renal function in coronary patients.

The second area of research is platelet reactivity in cardiovascular disease. The study of platelet reactivity in acute coronary syndromes, in close correlation with the continuation of

research in oxidative stress, were integrated in the project just mentioned. This two fields of research are closely interconnected in the study of pathophysiological mechanisms in atherosclerosis and the occurrence of major cardiovascular events. All this data were followed by further research in both directions and were continued by the publication of the book "Therapeutic ways to inhibit platelet function in cardiovascular diseases", by numerous scientific papers published and communicated nationally and internationally journals, and by three dissertation thesis.

Summarizing the results obtained in the field of platelet reactivity, it was highlighted the importance of monitoring platelet functions in patients at risk of developing high platelet reactivity followed by inadequate response to antiplatelet therapy. The correlations between platelet reactivity, oxidative stress and endothelial dysfunction in acute coronary syndromes and their negative impact on prognosis were also evaluated. High platelet reactivity in patients with coronary syndromes has been associated with a significant increase in the incidence of acute cardiovascular events and a decline in cardiac and renal function. Drugs with pleiotropic effects to reduce oxidative stress, platelet hyperactivity and endothelial dysfunction have reduced the incidence of cardiovascular events including sudden death in coronary patients by providing cardiovascular and renal protection and better control of blood pressure.

All these results have improved my national and international visibility in fundamental and applied clinical research. Thus, the efficient correlation of the didactic activity with the scientific one, results in the increase of the quality of both the educational process and of the scientific data.

The third field of research approaches integrative medicine and natural compounds with antioxidant capacity. Integrative medicine performs the interconnection between conventional medical practice, complementary medicine and alternative medicine in all fields of therapy and research. Integrative approaches in human pathology and especially in cardiovascular pathology have been shown to play an important role in improving the prognosis and quality of life of patients. Oxidative stress is involved in triggering most diseases in human pathology and could be reduced by a lot of natural compounds with antioxidant effect. As a result of numerous results of research in the fields of oxidative stress in recent years, I have participated with researchers from other countries in three articles in the field of integrative medicine in close correlation with oxidative stress and published in ISI indexed journals.

I demonstrated the ability to lead research projects and work in the research team, collaborating with top specialists at international level, participating in: 7 projects / grants won by international and national competition as project director or member of the research team ; 4 international registries as principal investigator; 21 international clinical trials 13 as principal investigator and 9 as co-investigator.

All these research projects are materialized in the numerous articles published in collaboration with brand specialists from the country and abroad, in journals with high scientific impact and communicated at national and international congresses and conferences. Summarizing the results obtained in all fields of research, they include 88 scientific articles, 50 in extenso, of which 35 are published in ISI-listed journals and have 6422 citations and an H-Index of 10.

**Chapter 2** of this part, the professional and academic achievements, started with the graduation of the Faculty of Medicine, Victor Babeş University of Medicine and Pharmacy Timișoara. As a result of the exams I obtained the confirmations as MD and later senior MD in two medical specialties - Cardiology and Internal Medicine under the coordination of Ms. Prof. Dr. Mariana Radoi, a prominent figure in the medical field and Mr. Prof. Dr. Ion Bruckner a titan of Romanian medicine within the University of Medicine and Pharmacy "Carol Davila" Bucharest. I have also the position of head of the Clinical Cardiology I Department of the Brasov County Emergency Clinical Hospital.

My academic career began in 1996 as an Assistant Professor and I went through the stages of the academic development, becoming Associate Professor in 2009, coordinator of Internal Medicine in the Department of Medical and Surgical Specialties of the Faculty of Medicine, Transilvania University of Brasov.

The coordination capacity of the research and professional teams is also argued by the following leader position in my career: Head of the “Center for research in applied medicine and interventional strategies in practice medical” of the Research and Development Institute, of the Transilvania University of Braşov, Head of Clinical Department of Cardiology and Medical Director of County Emergency Clinical Hospital Braşov.

Membership in international and national scientific societies also contributes to international recognition: European Society of Cardiology, European Association of Echocardiography, European Heart Rhythm Association, Romanian Society of Cardiology. Also an important role in increasing personal and institutional visibility is played by involvement in

scientific activity as a reviewer in several international and national journals: American Journal of Therapeutics, Clinical Experimental Pharmacology and Physiology, Romanian Review of Laboratory Medicine, Bulletin of Transilvania University and Brasov Medical Journal Review.

**The second section** of the habilitation thesis is dedicated to future scientific research and academic career development. My own plans for professional development and evolution are based on the history of academic and professional activity so far. Obtaining the certificate to coordinate doctoral theses is the key to success in future academic and scientific activity, under the leadership of great personalities of the academic community of the Doctoral School of the Transilvania University of Braşov. Habilitation in the domain of medicine will allow me a personal development, and in addition, it will give me the opportunity to coordinate young doctors towards a successful academic career to be part of the academic elite of the Transilvania University of Braşov.

The fields of research in which I have excelled so far will be the basis of my development and a priority for the future. The field of oxidative stress represents for me and my research team a continuum in scientific activity, including further development plans with the following two main research directions, first the correlations of oxidative stress with the reduction of longitudinal myocardial deformity in coronary syndromes and early diagnosis of heart failure and the second one, drugs with antioxidant effect in controlling blood pressure. In the field of platelet reactivity, the research will evaluate therapeutic approaches in coronary patients with atrial fibrillation and platelet hyperreactivity. In the field of integrative medicine two scientific topics will be found in future scientific research: the effectiveness of spirulina in reducing oxidative stress and blood pressure control and the role of antioxidant activity of *Viola tricolor* L. in coronary syndromes.

The academic and scientific development plan has as estimated results the participation in competitions for obtaining national and international grants, as a project coordinator or partner and the publication of their results. The organization, participation in conferences, involvement in national and international research teams, coordination of future generations of students, resident doctors and PhD students will increase scientific visibility by disseminating research results, by publishing research results in ISI-listed journals, with high impact factor.

The development of academic activity will be based on the continuous process of improving the teaching methodology of the discipline, on helping, coordinating, supporting and permanently involving students in the process of deepening medical knowledge and research

activity, to ensure and provide updated information in accordance with national and international diagnostic and treatment guidelines.