

**UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE „CAROL DAVILA” BUCUREȘTI**  
**ȘCOALA DOCTORALĂ**  
**DOMENIUL MEDICINĂ**



**TEZA DE ABILITARE**

CANDIDAT:

**ȚINCU RADU CIPRIAN**

Conferențiar universitar

Universitatea de Medicina și Farmacie „Carol Davila”, București

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# PERSPECTIVE MULTIDISCIPLINARE ÎN TOXICOLOGIA CLINICĂ

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## ABSTRACT

The habilitation thesis with the title "**Multidisciplinary Perspectives in Clinical Toxicology**" represents the summation of the entire academic, scientific and clinical activity that I have carried out starting with the beginning of my activity at the hospital level and later continuing with the admission to the doctoral studies, finalized by accessing the career university within the Clinical Toxicology Discipline of Department 14, Orthopedics-ATI, UMF "Carol Davila" Bucharest.

This thesis aims to outline the academic and scientific path I have taken and to outline future goals and projects that I will achieve, many of them being centered on the formation of multidisciplinary teams that will bring numerous benefits to both the daily care of patients and the scientific community. The structure of the thesis contains two major chapters, divided in subchapters.

I believe that medical practice is by its nature teamwork, and continuous collaboration between medical specialties offers varied perspectives, better accuracy of information and benefits reflected both in patient management and in the professional development of each member involved.

The first chapter contains information about to **professional, academic, and scientific achievements.**

I am currently a primary care physician in anesthesia and intensive care and I work in the position of head of department within the ATI 2-Toxicology Department of the Bucharest Emergency Clinical Hospital, but my career started in 2008 when I became Anesthesiology and Intensive Care resident in the same hospital. There was a natural evolution of my medical degrees, since 2012 I am certified with European Diploma in Anaesthesiology.

My academic career started when I was admitted to doctoral research studies and then as an Assistant Professor in 2015, followed by Senior Lecturer and finally Associated Professor in 2022, in the Clinical Toxicology Discipline of UMF „Carol Davila” Bucharest.

The research activity was focused on fundamental toxicology studies, as well as clinical toxicology. Nevertheless, as an intensivist there is a permanent interest in critical care issues like critical care nutrition and as an anesthesiologist I was focused on difficult intubation techniques and novel devices used to reduce infection rates.

In the new era of novel substances abuse, I am involved in INTOXICATE study (ex-TOXIC-Europe study) - an observational, multicenter study conducted in Europe and other continents to look at the outcomes and prognosis of intoxicated patients at intensive care units, endorsed by ESICM (European Society Intensive Care Medicine) and by EAPCCT (European Association of Poisons Centers and Clinical Toxicologists).

All my efforts and professional activity were acknowledged by Ministry of Health, since I am coordinating National Toxicology Information Center and by international peers – as I am the Romania representant in The European Chemicals Agency since 2017.

Starting from 2019, as President, I coordinate the working group of the Ministry of Health Experts in Toxicology issues and toxicological response in case of emergency.

My research activity has materialized as the primary author of 12 articles and as a co-author of 10 articles published in Thomson Scientific ISI Web of Knowledge indexed journals with the impact factor calculated by Thomson, the majority of them being published after obtaining my doctor in medicine degree. Currently, I have the following scientometric indices: Hirsch index of 6 (Web of Science Core Collection) with 118 citations.

The second chapter of this thesis includes the milestones of **professional, academic and scientific development.**

As head of the Clinical Toxicology discipline, I propose to modify and update the curriculum of courses and practical work. This update is absolutely necessary considering the diversification of existing xenobiotics, but also changes in addictive behavior. The increase in the number of users of recreational substances is a challenge of today's society. The emergence of new psychoactive or ethnobotanical substances has caused an important change in the pathophysiology of acute intoxications. In addition, these new drugs have changed the known concepts of the phenomenon of tolerance, addiction and withdrawal. Another important element aimed at modifying the course program is the effects of low toxicity exposures, such as heavy metals. The effects of chronic exposure, even at low doses, have medium and long-term effects, targeting certain correlations with chronic pathologies. All these complications of exposure to heavy metals must be presented to students, knowing the involvement of heavy metals in the onset or aggravation of chronic diseases.

The inclusion in the program of some notions about heavy metals is a first step in familiarizing students with the mechanisms of toxicity and the pathophysiology of such

exposures. Lead, cadmium, mercury, and arsenic are often referred to as "heavy metals," and their defining chemical characteristic is high density. Exposure to heavy metals is usually accidental or occupational. It is most commonly achieved by consuming contaminated food and water or by inhaling contaminated air. Although heavy metals cause toxicity through multiple mechanisms, some of these processes are not yet elucidated. Each substance has its own mechanism of toxicity. The major mechanisms by which most heavy metals cause toxicity include generation of reactive oxygen species, inhibition of enzyme activities, and attenuation of antioxidant defense systems. Heavy metal ions are known to interfere with DNA and nuclear proteins, leading to structural and functional DNA damage, as well as changes that initiate carcinogenesis, apoptosis, and cell cycle modulation.

My following plans will be focused in finishing ongoing projects, as well accessing new funding for medical research. My plans for future are constantly growing in professional and academic activities. I am particularly interested in international modern toxicology studies and in growing young investigators toward fundamental and clinical research in toxicology. It is one of my beliefs that gathering a solid academic community around the Discipline will increase people empowering; none of the previous activities and achievement could be accomplished without an entire team dedicated to patients and endless efforts in research.

Considering the deontological code adopted by the College of Doctors in Romania, which in article 1 states that "the entire professional activity of the doctor is dedicated exclusively to the defense of life, health and the physical and mental integrity of the human being", an important role that I had during the COVID-19 pandemic was to bring the necessary medical information into the public space in a time of misinformation and uncertainty for the general population. I was part of the communication group of the Ministry of Health together with other doctors or communicators.

The main purpose of the doctor's relationship with the mass media is to increase the education level of the population, but also to provide information based on scientific evidence. A paradox of today's society that is connected to technology and can receive information in real time is represented by the promotion of fake news or information from uncertain sources. Such an approach is responsible for the low rate of vaccination, regardless of the type of vaccine, for a low rate of prevention of chronic pathologies that could have been prevented through access

to correct medical information, an extremely low percentage of medical activity aimed to identify those changes in time before the appearance of diseases.

The professional career development plan will have to take into account the creation of an academic environment in which professional cooperation, decision-making transparency, recognition of professional values, respect for colleagues and partners, but also interests with the maintenance of university cohesion, honoring ethical and deontological principles university.