



Universitatea  
Transilvania  
din Braşov

# HABILITATION THESIS

## SUMMARY

Title: ASPECTS OF INTERDISCIPLINITY AND INTEGRATIVE MEDICINE  
IN THE DIAGNOSIS AND THERAPY OF MUCOCUTANEOUS  
INFECTIONS

Domain: Medicine

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The habilitation thesis "ASPECTS OF INTERDISCIPLINARY AND INTEGRATIVE MEDICINE IN THE DIAGNOSIS AND THERAPY OF SKIN INFECTIONS" includes my scientific, professional and academic achievements after obtaining the title of Doctor of Medical Sciences and personal plans for further career development. Qualification in the field of medicine represents the achievement of the highest level of professional, academic and scientific training.

The **first section** of the habilitation thesis includes the main results of my professional, academic and research activity, in close correlation with the level of knowledge in the research fields at the time, the most important scientific contributions in the field of dermatovenerology with a focus on cutaneous infections being mentioned, approached both from the classical point of view and from the point of view of interdisciplinarity and integrative medicine.

In **chapter 1**, the main results of the scientific research are presented, systematized according to the respective research fields: dermatophyte infections of the skin, sexually transmitted infections, interdisciplinarity and integrative medicine, and other research fields are also briefly mentioned at the end.

The first area of research was that of skin infections with dermatophytic fungi. Considerable changes have been registered in the last century regarding the etiological spectrum of dermatophyte infections. Contributing factors such as population migration, industrialization, population aging or the increase in the incidence of conditions such as diabetes melitus, neoplasia, HIV infection, circulatory disorders, or antibiotic and immunosuppressive therapies have influenced the epidemiological profile of dermatophyte infections.

Although fungal infections do not cause epidemics or pandemics, their incidence has increased significantly, especially due to the increase in the number of patients with compromised immune systems. Dermatophytic infections in immunocompromised patients are much more varied and often refractory to treatment, more severe than in immunocompetent subjects. Many pathogens that normally produce localized, self-limiting skin infections can have high morbidity and mortality in immunocompromised individuals. In these immunocompromised patients, the correctness and precocity of the diagnosis becomes essential for epidemiological purposes and for the establishment of a correct treatment.

This field of skin infections with dermatophyte fungi has concerned me since the beginning of my professional and scientific career. In this context, the doctoral thesis was also developed: *Clinical and laboratory research in human skin diseases produced by filamentous keratinophilic fungi in immunocompromised patients*, the published book entitled *Cutaneous Mycoses*. Moreover, most of the research activity and scientific works published at national and international level in journals with high scientific visibility, have addressed this interesting topic of dermatophytic infections in immunocompromised patients (neoplastic, with end-stage chronic renal disease, with decompensated diabetes, etc.). Dermatophytic infections in immunocompromised patients are often disseminated, asymptomatic and refractory to treatment. In this context, the accuracy and timeliness of the diagnosis become essential for epidemiological purposes and for the establishment of an appropriate treatment, and susceptibility testing is mandatory.

The **second area of research** is that of sexually transmitted infections, which continue to represent a global public health problem. A recrudescence of sexually transmitted infections has been

observed in recent decades. This increase reflects on the one hand an improvement in detection, especially for genital infection with chlamydia, and on the other hand a deterioration of the healthcare infrastructure. However, the major factor in the increase is most likely the change in sexual behavior: the age of the onset of sexual life has decreased, the period of experimentation and changing partners has lengthened. An increase in the incidence of gonorrhoea among gay men has also been observed in association with increasing antibiotic resistance. Given that gonococci have acquired resistance to all antibiotics used to treat gonococcal infection in the 1970s and 1980s, it is necessary that research should not be focused exclusively on newer derivatives of previously used antibiotics, but specifically on antimicrobial substances new ones that act through different mechanisms.

Sexually transmitted infections can be prevented and controlled by three basic strategies: reducing the risk of transmission in any type of sexual contact (use of condoms), reducing the rate of changing sexual partners, and reducing the period of infectiousness. Control programs have emphasized the first two strategies, especially after the outbreak of the HIV epidemic. New opportunities to control sexually transmitted infections come from strategies that will reduce the infectious period of patients through more accessible services, through screening of the patient's sexual contacts, through partner notification, through simplified single-dose therapies to improve treatment compliance. In this sense, we carried out the studies that addressed sexually transmitted infections as a theme.

As a result of the numerous studies that demonstrated the causal relationship between HPV infection and cervical cancer, and as Romania ranks first in Europe in terms of the incidence of cervical cancer, we conducted a study to evaluate the rate of genital infection with HPV, of the prevalence of HPV genotypes and establishing correlations with abnormal cervical cytology among the female population of Braşov county, which allowed us to develop guidelines for the evaluation of patients at risk, especially in women over 30 years old.

**Another important area of research** has been related to the interdisciplinary aspects generated by the complex, still incompletely elucidated interrelationships between some chronic inflammatory skin conditions and the increased incidence of traditional cardiovascular risk factors. The skin is an interdisciplinary organ, many of the cutaneous diseases can have systemic manifestations, and on the other hand, the skin-mucosal manifestations can be an important marker for a diverse range of systemic diseases. In recent years, several inflammatory skin conditions, the most studied being psoriasis, are no longer regarded as a simple skin condition but rather as systemic inflammatory conditions that associate an excess of metabolic dysfunctions and cardiovascular risk factors. It seems that most of the time systemic inflammation and oxidative stress are the ones that underlie the relationship between inflammatory skin diseases and cardiovascular diseases. Patients with inflammatory skin diseases should be proactively assessed for cardiovascular disease risk and comorbidities should be actively managed.

In the **fourth field of research**, we approached aspects of integrative medicine, namely studies that analyzed various natural extracts, covering two large fields with potential applicability in dermatological pathology or their comorbidities. Some have been studied for their antioxidant activity, reducing the oxidative stress underlying the systemic inflammation in chronic inflammatory

skin conditions (psoriasis, rosacea, etc.), and others for their antimicrobial action, being seen as a viable alternative to current antibiotics, in the context of which are increasingly becoming ineffective, as in the case of gonococcal infection, and a premise for the development of new effective antibiotics. In this sense, as a result of the collaboration in multinational research collectives, numerous works have been developed that have been published in established scientific journals with a high impact factor.

**Chapter 2** summarizes my professional and academic achievements. In 2002, I graduated the Faculty of Medicine of the Transilvania University of Braşov. In the same year, after passing the national residency exam, I became a resident doctor in dermato-venerology. As a result of specialized training and taking specific exams, in 2007 I obtained the qualification of specialist doctor (confirmation by Order of the Minister of Health no. 2140/2007), and later in 2012 that of primary doctor in dermato-venerology (Order of the Minister of Health no. 848/2012).

My academic career began in 2003 as assistant at the Faculty of Medicine of Transilvania University of Braşov. In 2014, I was promoted through a competition as lecturer, and in 2017, as a recognition of the quality of my teaching and scientific activity, I became associate professor.

Starting in 2018, I was appointed as the coordinator of dermatovenerology residents at the Braşov University Center. In 2017, as a member of the specialized commission of the Ministry of Health, I contributed to the realization of the training curriculum in the dermatovenerology.

Ability to coordinate research and professional teams is proven by the fact that, starting from 2016, I hold for the third consecutive term the position of director of the Medical and Surgical Specialties department, and that of coordinator of the department's research center: RESEARCH CENTER IN APPLIED MEDICINE AND INTERVENTIONAL STRATEGIES IN MEDICAL PRACTICE (AMISMP).

Membership as a member of international and national scientific societies also contributes to the international recognition of my activity: European Academy of Dermato-Venereology, Romanian Society of Dermatology, Romanian Society of Dermato-oncology, Association of Transylvania Dermatologists, Association of Dermatologists from Moldova, Balkan Medical Union. The membership of these professional associations allowed me to be a collaborator in the organization of several scientific events over time, and to constantly participate in the conferences organized by these associations, presenting scientific papers at most of them.

Over time, I have demonstrated the ability to work in research teams by collaborating with colleagues in the country in research projects. From the first years of my professional activity, I participated as an investigator or co-investigator in numerous clinical trials, a fact that helped me in the formation of management and research ethics skills.

The results of these research projects have materialized in the numerous articles published in collaboration with brand specialists from home and abroad, in magazines with a high impact factor and communications at national and international congresses and conferences. Synthesizing the results obtained in all research fields comprising over 130 full-length articles of which 17 published in ISI-listed journals (FCIAP - 33,386) and having 162 citations with a Hirsch index of 9.

The **second part** of the habilitation thesis is dedicated to career development and development plans. My own plans for professional development and evolution are based on my previous teaching and professional activity, and obtaining the recognition of the right to coordinate doctoral theses represents a new stage in my future professional and scientific activity. In the future, I consider it a priority to combine teaching activity with research activity and clinical activity, as these three indispensable pillars of professional excellence work together to create a successful professional identity. Medical professional development includes professional competence, professional identity and good teaching skills. I tried to guide my future development plan by looking deeply inside my personal aspirations, strengths, values, priorities, current roles and personal and departmental priorities.

The research development plan will continue to focus on the main lines of my research activity that I have been involved in so far, that of dermatological pathology in general, and that of infectious and inflammatory dermatoses in particular. In addition, following the research results of recent years, two new directions have emerged, that of interdisciplinary medicine and that of integrative medicine.

Future scientific research will include studies starting from several innovative research ideas in dermatology that explore both emerging technologies and untapped areas of skin health:

- research to develop new bioactive compounds and nanotechnologies to improve sun protection, reduce premature aging and prevent skin cancer.
- development of personalized treatments based on genetic analysis and skin microbiome for skin conditions such as acne, atopic dermatitis or skin cancer.
- using artificial intelligence and machine learning algorithms to improve diagnosis of skin diseases such as melanoma through automated analysis of dermatoscopic images.
- testing the use of stem cells to treat scars, severe burns and degenerative skin conditions such as psoriasis or vitiligo.

These ideas reflect current and future trends in dermatology, with a focus on innovation, customization and cutting-edge technologies.