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HABILITATION THESIS

"Nutritional metabolic monitoring of adaptation diseases in animals: interdisciplinary approach"

Summary

Habilitation thesis reflects the entire professional and research activity carried out after doctoral thesis (period 2000-2015). This activity is based on scientific and academic achievements on disciplinary or interdisciplinary thematic directions, made in Bucharest at the University of Agronomic Sciences and Veterinary Medicine and Postdoctoral School.

The common element of scientific research activity is centered on studies in various fields of internal veterinary medicine out of which, in the past five years, are predominant mainly monitoring nutritional-metabolic adaptation diseases in animals of economic interest and studies in phytotherapy for obtaining and patenting an immunomodulatory extract. Monitoring of metabolic profiles in various internal diseases in animals was an important step in achieving the goal: Metabolic profile - forecasting tool for group pathology in animals of economic interest.

The most significant scientific achievements were published in journals ISI Thompson – indexed (impact factor). Noteworthy, the contribution in the development of several researches that include epidemiological and clinical investigations and treatment of various diseases in animals.

After conferring the title of Doctor of Veterinary Medicine and until present I have elaborated and published over **300** scientific papers, textbooks, along with participation in current professional activities. In **2003** I published the book **Cardiovascular Veterinary Pathology**, a novelty in the field of Veterinary Sciences, distinguished in 2005 with **Romanian Academy Award "Traian Savulescu"**. In the same area I edited in 1985 "**Comparative cardiovascular pathology.**" In 2008 two volumes of **Pathology and Veterinary Internal Medicine** are published and for these, in 2010, I was awarded **the prize "Vasile Gheție" of Academy of Scientists in Romania.**

As regards the research activity, the following directions are relevant:

1. *Studies to monitor nutritional metabolic adaptation diseases in animals* with respect to gestational toxicosis in sheep and the transition period in cows. In this connection, in the frame of the topic *Adaptation to climate changes in animals (cattle) and eco-innovative solutions*, after graduating the Postdoctoral School for Agroforestry Biodiversity, I participated to interdisciplinary research with specialists in veterinary research field, specialists in animal husbandry and meteorology and others. As main objectives we monitored the effect of climate change on dairy cows: the paper presented at the 32th World Veterinary Congress (2015, Istanbul), we have described the main effects of the

influence of temperature-humidity index on dairy cows. Moreover, further thematic papers presented other and eco-innovative solutions. A special contribution is related to the completion of the overall framework of adaptation diseases which, in addition to animal and human health, environmental health is very important, by understanding and shaping the concept of Ecosanogenesis.

2. *Research on selenium traceability in anthropogenic ecosystems:* scientific contributions relate to the elaboration and presentation of an original scheme in the chain of anthropogenic ecosystems, respectively relationship air-water-soil-plant-animal-food-man. Up to now, in veterinary medical literature is considered only the relationship soil-plant-animal: thus, selenium must be quantified in all these links to understand its role, especially in the deficiency states. Compared to the data known so far in our country about the presence of selenium in soil and animals, the scientific contributions refers to determinations of selenium levels in cattle hair and water sources.

3. *Studies of comparative medicine* on gout in patients with steatosis, cirrhosis and hepatocellular carcinoma. Through an interdisciplinary approach (human medicine - veterinary medicine) I conducted scientific papers that have been presented at international congresses and published in journals of impact. Research has shown the contribution of veterinary medicine to acquiring knowledge on etiopathogenesis of liver dysmetabolic, inflammatory and degenerative states.

4. *Studies on the etiology of diarrheic syndrome in calves.* It is a topic studied during doctoral stage and after its completion, the work continued with great success in the frame of a Project granted by the Romanian Academy in 2007. The results have contributed to the knowledge of etiopathogeny of this syndrome, the clinical evaluation of dehydration and acidosis states in calves; were imagined clinical criteria for evaluation and there were used two methods for monitoring risk factors: detection of subclinical mastitis (2000) and metabolic urinary monitoring using rapid tests (screening test).

5. *Interdisciplinary studies in veterinary clinic area.* By conducting interdisciplinary clinical research, I prepared case studies- type papers in internal and surgical medicine in companion animals. These works proved that interdisciplinary teams that can elaborate valuable scientific papers for clinical practice.

Relevant achievements on the interdisciplinary topic were disseminated through *participation in two conferences WSEAS (Academy World of Science), Greece (December 2010) and the Canary Islands (March 2011), where I presented orally 4 papers ISI in extenso (no impact factor).*

An important direction on the ability to organize and manage teaching activity was materialized by the position of Head of the University Clinics of the Faculty of Veterinary Medicine from 2008-2012. Under my supervision, several performance indicators were achieved: intranet system was implemented in clinics (electronic and paper-based sheet of clinical data of animals treated by observation charts designed and made by our teams), diversification of services (cardiology, dentistry, ophthalmology, imaging, forensic medicine, dermatology etc.), organization of permanent guard service (1 doctor and 4 students), conducting internships of students in the IV, V and

VI years in the clinic during the holidays, providing significant extra resources for activity in clinics etc.

During postdoctoral studies I supervised as project manager a Romanian Academy Grant (2007-2008), won in the national competition, entitled "*Studies on the etiopathogenesis and pathogenetic complications of diarrheal syndrome in calves*". Contributions on the subject refer to identify the main risk factors for the syndrome, clinical and para-clinical identification of possible pathogenetic complications. The research results were disseminated at various events and published in scientific journals BDI-indexed.

On the interdisciplinary direction I won a project *Partnership in Priority Areas at the national competition -PN II (2011-2016): "Advanced research on the development of some phyto-immunomodulators for veterinary use linked up with industrial development for technologies and products"*. PCCA project 134/2012. I am the manager of a consortium with 4 partners and the results were disseminated to the European Congresses of Biotechnology at Bratislava (2013-2 works), Lecce (2014-2 works), Bucharest (2016-1 work). At the International Symposium at the University of Craiova in the years 2013 and 2015, the Symposia in Chisinau, FMV FMV Bucharest and Iasi I also have presented papers on the project topic. In 2016, in the frame of the above mentioned project we plan to submit 2 patents of innovation to reveal personal contributions originality: the obtainment, preclinical and clinical testing in animals of a phytoextract with immunomodulatory activity .

After defending the doctoral thesis I have published 36 ISI-indexed articles: -13 **published in extenso** in ISI journals with impact factor (IF cumulative = 4,084), 4 published **in extenso** in ISI journals with no impact factor; 15 published as **abstract** in ISI proceedings; 102 published in journals BDI-indexed; and 73 participations to national and international symposia.

Hirsch Indicator= 2. Total quotations 29, out of which: 21 quotations in ISI rated magazines; 8 quotations in BDI rated magazines

I am scientific referent at prestigious national journals member of the editorial board of the Publishing House Sitech Craiova.

In the last chapter of the thesis are presented academic and scientific prospects for development, evolution plans and career perspectives.

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