ABSTRACT

This habilitation thesis entitled ***Contributions and studies regarding obtaining and characterizing the properties of some microbial and vegetal bioproducts with applications in biotechnologies*** includes two main parts. The first part includes the abstract of habilitation thesis in English and Romanian and in the second part are presented the scientific and professional achievements. The second part includes: *Chapter 1 – The academic, scientific and professional achievements,* the Chapter 2- *Contributions and studies regarding obtaining and characterizing the properties of some microbial and vegetal bioproducts with applications in biotechnologies,* the *Chapter 3- The plans for evolution and career development,* and the *Chapter 4- References*.

The academic and professional achievements that have been considered as basis for this habilitation thesis are referring to the period March 2005-May2018 which corresponds to the period after finishing the PhD thesis (March 2005). These achievements include the most relevant results from international and national research projects which are published in journals with international visibility, as well as patents. The thesis presents some aspects of the biotechnology, studied over the last 13 years, and addresses on two directions.

A first direction of my research was the use of by-products from antibiotic pharmaceutical biosyntheses, in particular the micellar microbial biomass, (resulted as waste from biopharmaceutical biosynthesis), that can represent after inactivation a valuable raw material both in the process of purifying industrial waters containing heavy metals and for agriculture. Such a by-product, which mainly contains the biomass of *Streptomyces noursey*, can be used after inactivation as a heavy metal biosorbent. The microbial biomass loaded with micronutrients can be used after drying in formulating of NP NK, NPK, PK type fertilizers for fertilization of leguminous plants in greenhouse or field.

The second direction of my research was the obtaining and the characterization of microbial or vegetal bioproducts with potential applications in therapy. Here the research was focused mainly on microorganisms from the genus *Monascus*, on probiotic microorganisms' consortia (PMC) and on the vegetal extracts obtained from indigenous plant sources such as *Plantago sp.* Thus, simple or nanoconditioned bioproducts obtained from *Monascus sp.* extracts, from consortia of probiotic microorganisms or plant species such as *Plantago sp.* have been tested *in vitro* and / or *in vivo* for scarring, antioxidant, antifungal and antitumor activity, promising results being achieved.

Regarding the evolution and development plan of my scientific and academic career comprising future research directions, I intends together with the research teams with whom I collaborate to develop new microbial or vegetal bioproducts with potential antitumoral effect, and to characterize their mechanism of action *in vitro* or *in vivo* through preclinical laboratory tests.

The formation of new scientific researchers is also a priority, they are to be integrated in interdisciplinary research teams to accomplish their professional training through doctoral studies at the two faculties with specific of Biotechnology and Medical Engineering from the Politehnica University of Bucharest and /or University of Agronomic Sciences and Veterinary Medicine Bucharest or in Research institutes oriented towards life sciences.