



Microbial Culture Collection of “Cantacuzino” Institute

Present and perspectives of development

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“Cantacuzino”

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“Cantacuzino” Institute (C.I.) as National Research Institute in Microbiology and Immunology

- **The largest** in Romania in the field of medical microbiology
- **Main activities** since it has been founded in 1921
 - **Basic and applied research** in medical microbiology and immunology
 - **Production** for national purposes:
 - vaccines
 - therapeutic sera
 - media and biological reagents for diagnostic in medical microbiology
 - animals for experiment and control of biologicals used in human
 - **National reference activity in medical microbiology** and rapid answer for epidemiological purposes
 - **Training** in medical microbiology and immunology



Department of Microbial Culture Collection

- **Founded in 1921**

- **Main duties**

- supplier of reference strains for microbiological laboratories at a national level
- safety conservation for production strains of C. I. laboratories
- taxonomic identification of the new isolated strains
- collaboration to other C. I. laboratories for the study of:
 - antibioresistance factors
 - bacteriological virulence factors,
 - genetically modified microorganisms etc.



**Contribution to development of medical and academic activities,
scientific research in Romania**



Storage of reference strains

- 1550 microbial cultures preserved by freeze drying
 - 35 bacterial genera
 - 17 fungal genera

Mainly, this collection included:

- Antibioresistant strains (*S. aureus*, *Pseudomonas aeruginosa*) isolated from nosocomial infections in different periods of time
- Enteric bacteria - reference antigenic cultures for Enterobacteriaceae (*Salmonella* sp. especially), *Vibrio* sp. obtained from the other international collection or particular strains isolated in large epidemics in Romania
- Some other bacterial cultures pathogenic in humans and animals with particular reference to genus *Bacillus*



Supplier of reference strains

A new updated catalogue of microorganisms (**2006**), available to be distributed by request to:

- Research centers in medical and academic institutes
- Clinical hospital laboratories
- Regional laboratories for epidemiological microbiology and quality control (reference strains)



Present and perspectives of development

In **2005**, within BIOTECH project, a pilot collection was initiated, based upon the Microbial Culture Collection founded in 1921, intended to become the starting point for the future modern microbial collection of C.I. in accordance with the international requirements

- Objectives:
 - the phenotypical re-characterization of microbial strains from collection **(145 microbial strains during 2006-2008)**
 - **the strain characterization recording card** (for being used in the electronic databases)
 - freeze-drying strains preservation
 - determining: - the purity
 - the viability index after freeze drying
 - quality control certificate for strains supplied
 - storage



Present and perspectives of development

In **2008**, a collaboration with Centre for Scientific Medical-Military Research has started

- identification of microorganisms from Microbial Culture Collection using protein “fingerprints” determined by matrix-assisted laser desorption ionization–time of flight (MALDI-TOF) mass spectrometry.



Perspectives in near future

- The participation of the personnel of Microbial Culture Collection at EMbaRC training programme in collection management, authentication, characterisation, preservation, databasing storage of micro-organisms
- A new location of Microbial Culture Collection in the purpose to be achieved an adequate space according to legal requirements and OECD and WFCC guidelines



Perspectives in near future

- Double preservation system :
 - freeze dried
 - deep-frozen at - 80°C or in liquid nitrogen
- Molecular identification based upon sequencing of 16S rRNA gene (method established in Medical Epidemiology Laboratory by Monica Straut and colab.)



Perspectives in near future

- Improvement of the strains transfer system according with the new regulation of biosafety and biosecurity
- Improvement the informatics system for data registration and set up of an electronic archive
- Create the web site of the Microbial Culture Collection
- Certification of the Quality Management System (ISO 9001:2008)