



**Research Doctorate (Ph.D.) in Chemical Sciences  
32<sup>nd</sup> Cycle – Academic Year 2016/2017**

**Tutor:**

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**Project Information**

**1 - Title**

Secondary bioactive metabolites, to be used in the food, phythosanitary and pharmaceutical industries, produced by endophytic fungi from food and medicinal plants. Effect of growth conditions on their production.

**2 - Key words**

Secondary metabolites, endophytic fungi, bioactive natural products, extractive techniques, structure characterization.

**3 - Abstract**

Endophytic fungi (which are ubiquitous microorganisms living in the intercellular spaces of land plants) synthesize a profusion of compounds (*secondary metabolites*) whose specific function is to provide defence and to enhance health and fitness of the host.

By consequence, secondary metabolites from endophytic fungi hide original structural information which can be exported to evolve bioactive compounds for protection of farm plants and humans.

The aim of the present project is to isolate, identify, quantify and test for bioactivity secondary metabolites from a selected number of endophytic fungi and to investigate the effect on their yield of influence variables as the composition of culture medium and temperature.

We hope that this will provide the key to access structural strategies evolved over millions of years and to learn how to modulate biosynthetic capabilities of endophytic fungi for industrial production of useful compounds via biotechnologies.

Endophytic fungi species for this study have been isolated from several plants in nature reserve "Oasi WWF Cratere degli Astroni (Napoli)", from coconut tree and grapevine, and are cultured at CRA (Portici, Italia) and at *Departamento de Biologia*, CESAM (Portogallo).

Data will be mainly, but not exclusively, collected by employing NMR, GC/MS (after derivatization) and LC/MS techniques and interpreted by sophisticated software tools and databases.