



**HAL**  
open science

## The functional characterization of BcBOT3-BcBOT5 genes involved in the biosynthesis of the toxins botrydial

Javier Moraga, Berengere Dalmais-Lenaers, Josephina Aleu, Muriel Viaud,  
Isidro G Collado

### ► To cite this version:

Javier Moraga, Berengere Dalmais-Lenaers, Josephina Aleu, Muriel Viaud, Isidro G Collado. The functional characterization of BcBOT3-BcBOT5 genes involved in the biosynthesis of the toxins botrydial. 4th Spanish-Moroccan Symposium on Organic Chemistry and 7th Andalusian-Moroccan meeting natural products chemistry, Sep 2012, Almeria, Spain. 2012. hal-01191228

**HAL Id: hal-01191228**

**<https://hal.science/hal-01191228>**

Submitted on 3 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

---

**4<sup>th</sup> Spanish-Moroccan Symposium on  
Organic Chemistry  
(SMSOC-4)**

*and*

**7<sup>th</sup> Andalusian-Moroccan Meeting on  
Natural Products Chemistry  
(AMMNPC-7)**

**20-22<sup>nd</sup> September 2012  
Universidad de Almería, Almería (Spain)**

---

**Organizing Committee**

**President  
Secretary  
Vocals**

Manuel Muñoz Dorado  
Míriam Álvarez Corral  
Ignacio Rodríguez García  
Ahmed Ibn Mansour  
Mohamed Akssira  
Ahmed Benharref  
Ahmed Elhakmaoui  
Alejandro Fernández Barrero  
Isidro González Collado

**Address**

Área de Química Orgánica  
Facultad de Ciencias Experimentales  
Universidad de Almería  
04120 La Cañada de San Urbano  
Almería (Spain)

---

## Scientific Committee

Dr. Fernando López Ortiz (Universidad de Almería)  
Dr. Ramón Álvarez de Manzaneda y Roldán (Universidad de Almería)  
Dra. M<sup>a</sup> Dolores Ureña Amate (Universidad de Almería)  
Dr. Abdelaziz Dahdouh (Université Abdelmalek Saadi, Tetuán)  
Dr. Mohamed Elamine El Amrani (Université Abdelmalek Saadi, Tetuán)  
Dr. Fouad Mellouki (Université Hassan II, Mohammedia)  
Dr. Essassi El Mokhtar (Université Mohammed V-Agdal, Rabat)  
Dr. José María Miguel del Corral Santana (Universidad de Salamanca)  
Dra. Azucena González Coloma (CCMA-CSIC Madrid)  
Dra. Mercedes Amat Tusón (Universidad de Barcelona)  
Dr. Matías Reina Artiles (CSIC Tenerife)  
Dr. Carlos Jiménez González (Universidad de La Coruña)

## Sponsors

Plan Propio de Investigación de la Universidad de Almería

CAJAMAR

Facultad de Ciencias Experimentales de la UAL

Grupo Especializado de Productos Naturales de la RSEQ

Grupo Especializado de Química Orgánica de la RSEQ

Junta de Andalucía

## THE FUNCTIONAL CHARACTERIZATION OF *BcBOT3-BcBOT5* GENES INVOLVED IN THE BIOSYNTHESIS OF THE TOXINS BOTRYDIAL

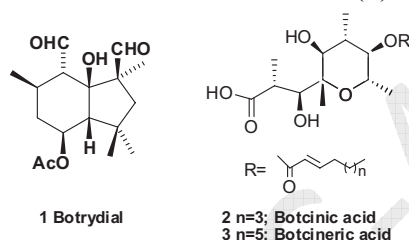
Moraga, J.<sup>2</sup>; Dalmais, B.<sup>1</sup>; Aleu, J.<sup>2</sup>; Viaud, M.<sup>1</sup>; Collado, I. G.<sup>2</sup>

<sup>1</sup>INRA, BIOGER, 78850 Thiverval-Grignon, France.

<sup>2</sup>University of Cadiz, 11510 Puerto Real, Cádiz, Spain.

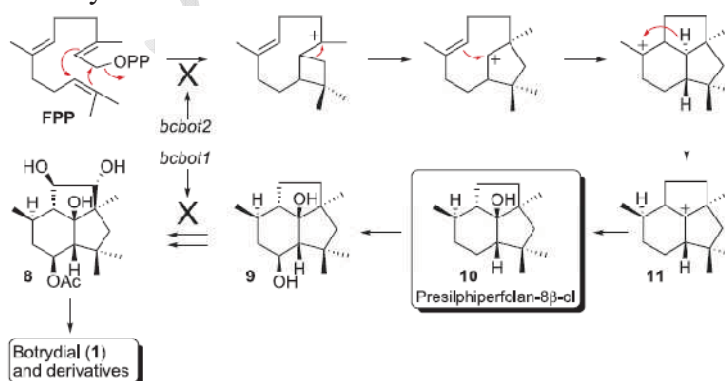
[isidro.gonzalez@uca.es](mailto:isidro.gonzalez@uca.es)

*Botrytis cinerea* is a well-known pathogen affecting a number of commercial crops, which produces a variety of structurally diverse metabolites. There is no evidence for the production of host-specific toxins by this fungus, which is in accordance with the broad host range of this pathogen. *B. cinerea* produces two series of phytotoxic metabolites: a family of sesquiterpenes which contain the basic botriane skeleton (1) and a family of polyketides (2,3).



Advances in genomic studies, in combination with increased access to DNA sequencing, are providing a wealth of information about how natural products are assembled, mechanisms by which natural product gene clusters can be manipulated to yield new product diversity, and the genetic potential of individual organisms.

In previous works we provided the functional characterization of *BcBOT1* and *BcBOT2* genes, which encode a P450 monooxygenase and a sesquiterpenecyclase, respectively. The region surrounding the previously characterized *BcBOT1* gene was identified as the botrydial biosynthetic gene cluster: *BcBOT 2* to *BcBOT 5* genes. Wherein *BcBOT3* and *BcBOT4* genes encode two P450 monooxygenases and *BcBOT5* shows high homology to known acetyl transferases.



In this communication we report the functional characterisation of the *BcBOT3-5* genes and the encoded key enzymes which catalyze intermediate steps in the biosynthesis pathway leading to botrydial and its derivatives.

