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**Poster Abstract - B.08**

# α-TOMATINE OF *SOLANUM LYCOPERSICUM* L.: BIOLOGICAL ACTIVITIES AND ISOLATION OF GENES INVOLVED IN THE BIOSYNTHETIC PATHWAY

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*cycloartenol synthase, antifungal activity, anticholesterolemic effect*

α-tomatine is a steroidal saponin, constituted by a tetrasaccharide group attached to the aglycone tomatidine. This compound is especially abundant in leaves and immature fruits of tomato, and has been found to inhibit the growth of various plant pathogens. Moreover, this substance shows pharmacological activity as an anticholesterolemic: for example, hamsters fed with tomatine showed a reduction of plasma LDL cholesterol. The aglycone of α–tomatine is synthesized via the mevalonate pathway: 2,3 oxidosqualene is converted by cycloartenol synthase to cycloartenol, the first carbonilic intermediate in plant sterol biosynthesis.

The main objectives of the present work are the study of biological activities of α–tomatine and the isolation of genes involved in the pathway. For biological activities, fungal and bacteria bioassays with crude extracts from different organs of five *Solanum lycopersicum* ecotypes were performed. All the tomato genotypes tested significantly inhibited the growth of *Rhizoctonia solani*, *Fusarium solani, Fusarium oxysporum,* and *Xanthomonas axonopodis* pv. *vesicatoria*. The growth of *Sclerotinia* sp. was inhibited by San Marzano and Corbarino ecotypes; whereas, the growth of *Erwinia carotovora* was moderately inhibited by extracts of San Marzano ecotype.

For molecular cloning of 2,3-oxidosqualene cyclase gene, encoding the cycloartenol synthase, a homology-based PCR method was applied in San Marzano ecotype by designing degenerate oligonucleotide primers at the regions which are highly conserved among known oxidosqualene cyclase genes. PCR was carried out to amplify the core fragment of the putative gene for cycloartenol sinthase (Sl CYC1) and PCR-RACE was applied for amplification of 3' and 5'-ends. Sequence comparison of Sl CYC1 showed a high level of similarity with other cycloartenol synthases. Other genes involved in anabolism and catabolism of α-tomatine have been investigated utilizing similar cloning strategies and results will be discussed.