Journal of Chemical, Biological and Physical Sciences

An International Peer Review E-3 Journal of Sciences Available online at www.jcbsc.org

Section E: Plant Biotechnology

CODEN (USA): JCBPAT

Research Abstract

Azospirillum Brasilense Altering Root Architecture of Arabidopsis thaliana Through TOR Kinase

E. Carrillo-Flores, Manuel Méndez-Gómez, María Elena Mellado-Rojas, Homero Reyes de la Cruz, Ernesto García-Pineda and Elda Beltrán-Peña*

Instituto de Investigaciones Químico-Biológicas de la Universidad Michoacana de San Nicolás de Hidalgo. Morelia, Mich., México.

Abstract: Plant root development is highly responsive both to changes in nutrient availability and beneficial microorganisms in the rhizosphere. Plant development involves the integration of environmental and endogenous signals, which together with genetic program it determines plants form. The auxins modulate every aspect of plant growth development and, it has been proposed that Azospirillum produces auxins between other phytoregulators. In metazoans insulin and IGFs can activate the PI3K/TOR /S6K cascade that play a central role in cell growth regulation. Many reports have described in plants the presence of various components of such cascade. Our results showed that A.brasilense alters the Arabidopsis root architecture: reducing (70%) PR length and increasing (150%) the number of LRs and root hairs, suggesting TOR involvement, since in its absence (tor-es1 mutants) the PR length is 32% shortened only and although the increase on the number of LRs was (360%) very dramatic, these roots were very small and root hairs development is severely affected.

Keywords: Azospirillum brasilense, TOR, Arabidopsis thaliana, Plant development

Corresponding author: Elda Beltrán-Peña

* e-mail corresponding author, (eldabelt@umich.mx)