البحث الأول

Hassan, G. M. and **Nada F. Hemeda (2016).** *In vitro* assessment of *Trichoderma asperellum* isolated from plant rhizosphere and evaluation of their potential activity against some pathogenic fungi. *Egyptian J. of genetics and cytology. 45*: 113-128.	البحث الأول

Title	***In vitro* assessment of *Trichoderma asperellum* isolated from plant rhizosphere and evaluation of their potential activity against some pathogenic fungi.**
Date	**2016**

ABSTRACT

Hydrolytic enzymes producing *Trichoderma* species have long been recognized as an agent for controlling plant diseases caused by various phytopathogenic fungi. This study aims to isolate and characterize of new bio fungicides from Egyptian soils and assess of their antagonistic activity against some pathogenic fungi (*Fusarium semitectum* and *Alternaria alternata*). Fifteen isolates of the genus *Trichoderma* were isolated from rhizosphere soil of different host plants collected from Fayoum governorate, Egypt. The isolates were characterized according to morphological characterization, microscopic observations and confirmed by sequencing the ITS region of 18SrRNA. *Trichoderma asperellum* isolates were evaluated for their potential to antagonize the plant pathogenic fungi of *F. semitectum* and *A. alternata in vitro* using the dual culture technique. Four out of twenty *Trichoderma* isolates (20%) were identified as *Trichoderma asperellum* based on morphological characteristics and confirmed by sequencing ITS region of 18SrRNA. The four selected *Trichoderma asperellum* isolates (Tas 1, Tas 2, Tas 3 and Tas 4) were screened for their ability to produce chitinase on solid agar medium using bromocresol purple for developing the clear zone around colonies, and characterized due to its antagonistic effect against mycelial growth of pathogenic fungi.These results indicate that molecular systematic studies based on the sequence of ITS region are important for confirmation of phenotypic characterization of *Trichoderma* isolates.

To the best of our knowledge, this is the first report on the occurrence and isolation of *T. asperellum* from Egyptian soils. In conclusion, our results suggest that molecular identification is very important to identify the *Trichoderma* species and it must be used to confirm morphological approaches in the identification of *Trichoderma*

isolates. Each of the two methods has owned strengths and limitations. Accordingly, we must use combine morphological and molecular methods for successful identification of *Trichoderma* isolates. Worth mentioning that, the four *T. asperellum* isolates (Tas1, Tas2, Tas3 and Tas4) were high producers for chitinase and showed high antagonistic activity against the tested pathogenic fungi. However, further study must be done for developing these isolate as a new bio- fungicides at large scale production.