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**MOLECULAR GENETIC VARIATIONS OF *THYMUS*
VULGARIS AND *THYMUS CAPITATUS* GROWN UNDER
DIFFERENT ENVIRONMENTAL CONDITIONS IN
RELATION TO BIOACTIVE PRODUCTS**

By

ESRAA ATYA EL-SHERBENY

B. Sc. Agric. (Genetic), Ain Shams University, 1998
Master in Environmental Sci., Ain Shams University, 2005

**A Thesis Submitted in Partial Fulfillment
of
The Requirement for the Doctor of Philosophy
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**Department of Agricultural Science
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الإختلافات الجزيئية الوراثية لنوعين من نبات الزعتر النامى تحت
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لاستكمال متطلبات الحصول على درجة دكتوراه فلسفة
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ABSTRACT

Esraa Atya EL-Sherbeny, Molecular Genetic Variations of *Thymus vulgaris* and *Thymus capitatus* Grown Under Different Environmental Conditions in Relation to Bioactive Products. Unpublished Ph.D. of Science Thesis, Department of Agriculture, Environmental Research Institute, Ain Shams University, 2009.

Thymus vulgaris cultivars obtained from three locations and *T. capitatus* which grown naturally were used to study the chemical composition of the essential oils. The environmental conditions of the different locations were taken to consideration studied and revealed that the collected *Thymus* nearly grown under different habitat conditions. The essential oils isolated were examined by a combination of Gas Chromatography / Mass Spectrometry GC/MS. The obtained data indicated that there are seventeen compounds were identified and there are clear differences between the locations in total oxygenated compounds. Protein banding patterns (SDS-PAGE) were using to identify the biochemical genetic fingerprint of each species. Meanwhile, a trial to identify the molecular genetic fingerprints based on ISSR of the studied species was carried out. In this respect, 6 primers were succeeded to amplify DNA and hence gave a fingerprint for each species. From the results of molecular markers it was possible to obtain some markers which are associated with of *Thymus sp.* under study which could be useful for distinguishing them from others.

Keywords: *Thyme sp.*; *T. vulgaris*, *T. capitatus*, locality, chemical composition, essential oil, SDS – PAGE, ISSR fingerprint.

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*Finally, I dedicate this thesis for my kids
(MALAK & LASSER)*

Esraa.A. EL-Sherbeny