GENETIC POLYMORPHISM OF SOME MEDICINAL PLANTS BELONGING TO *BRASSICACEAE*

By

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B.Sc. Agric. Sc. (Genetics), Ain Shams University, 1997

M. Sc. Agric. Sc. (Genetics), Ain Shams University, 2005

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ABSTRACT

Rasha Moustafa Abu-Sereai: Genetic Polymorphism of Some Medicinal Plants Belonging to *Brassicaceae.* Unpublished Ph.D. Thesis, Department of Genetics, Faculty of Agriculture, Ain Shams University, 2010.

Brassicaceae family has large number of species with a major economic, medicinal importance and great genetic diversity in the flora of Egypt. The genetic analysis was carried out on 11 Egyptian samples of ***Brassicaceae*** representing ten ***Brassicaceae*** species collected from different localities in Egypt. These species were characterized by SDS-PAGE, isozymes, RAPD and ISSR. SDS-PAGE of total proteins showed variation among ten species and indicate the relationship among them. Five isozyme systems including α and β *Est* (esterases), *Prx* (peroxidase), *Acp* (acid phosphatase), *Adh* (alchol dehydrogenase), *Mdh* (malate dehydrogenase) were carried out to test the genetic variability among the studied species. The results obtained revealed a significant level of polymorphism among ***Brassicaceae*** species. ISSR and RAPD-PCR primers were more informative than protein, isozyme in fingerprints. Fourteen reselected ISSR primers were used to evaluate genetic variability among ***Brassicaceae*** species under investigation. The results indicated that there was some variation in banding patterns among ten species. The genetic relationship based on SDS-PAGE, isozyme, RAPD and ISSR clearly indicated the genetic relationships among the ten species.

Key words: *Brassicaceae***,** SDS-PAGE, ISSR-PCR, genetic polymorphism.

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LIST OF ABBREVIATIONS

Acph	Acid phosphatase
10 mer-primer	10 - oligonuclutide primer
AFLP	Amplified fragment length polymorphism
APS	Ammonium persulfate
EDTA	Ethylenediamin- tetra acetic acid
EST	Esterase
L	Liter
MW	Molecular weight
Mdh	Malate dehydrogenase
mg	Milligram
ml	Millilter
NAD	Nicotine amid adinne dianucleotide
NADH	NADH dehydrogenase
NBT	Nitroblue tetrazolium salt
PCR	Polymerase chain reaction
PMS	Phenazine methosulfate
Prx	Peroxidase
RAPD	Random Amplified polymorphic DNA
SDS-PAGE	Sodium dodecile sulphate polyacrylamide gel electrophoresis
SPSS	Statistical package for social science
ISSR	Inter simple sequence repeat