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PHYSIOLOGICAL STUDIES ON THE EFFECTS OF BRASSINOLIDE ON *NIGELLA SATIVA* L.

**THESIS
SUBMITTED FOR THE MASTER DEGREE
IN SCIENCE TEACHER'S PREPARATION
(BOTANY)**

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2005

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ACKNOWLEDGEMENT

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First of all thanks to God for giving me the strength to fulfill this hard mission.

I wish to express my sincere appreciation and deep gratitude to **Dr. Amin Erfan Dowidar**, Professor of Plant Physiology, Department of Biological and Geological Sciences, Faculty of Education, Ain Shams University for his kind supervision, suggesting the problem, fruitful help, patriotic patience, energetic guidance and conclusive instructions throughout the course of this investigation.

Great thanks are due to **Dr. Ali Abdel-Aziz Abdallah**, Associate Professor of Plant Physiology, Department of Biological and Geological Sciences, Faculty of Education, Ain Shams University for his kind supervision, suggesting the problem, unlimited support on both scientific and personal levels and for his sincere guidance from the very beginning and up to writing the manuscript.

I am deeply indebted to **Dr. Salwa Mohamed Abbas**, Lecturer of Plant Physiology, Department of Biological and Geological Sciences, Faculty of Education, Ain Shams University for her kind supervision, suggesting the problem, continuous material and moral support, valuable advices and being a very effective factor in driving over this work successfully.

ACKNOWLEDGEMENT

Thanks are extended to **Dr. Ehab Abdel Razik Kamel**, Associate Professor of Genetics, Department of Biological and Geological Sciences, Faculty of Education, Ain Shams University for kindly offering all the facilities of his laboratory for the biochemical genetic studies continuous encouragement and valuable remarks.

I am greatly indebted to **Dr. Tahani Hathoot**, Professor of Plant Physiology, Botany Department, Faculty of Grils, Ain Shams University for doing her best in solving the problem of the chemical used (brassinolide) in this investigation.

I would like to express my deep thanks and gratitude to all the members of Biological and Geological Science for their valuable help during the course of this investigation especially **Prof Dr. Mohamed Abdel Hameed Shahin**, Chairman of Biological and Geological Sciences, Faculty of Education, Ain Shams University for providing facilities during the practical work.

ABSTRACT

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In the present investigation, *Nigella sativa* seeds cv. Egyptian and Syrian were presoaked in the different concentrations of brassinolide (0.0025, 0.05 and 1.0 ppm). The effect of brassinolide on growth, certain metabolic activities, rate of respiration, protein pattern, cytological criteria and the cell division of the produced seedlings of the two cultivars after 10 days from sowing were studied. The results revealed that, the low concentrations of brassinolide (0.0025 and 0.05 ppm) caused high significant increases in the growth criteria, total carbohydrates, total nitrogen, total protein, nucleic acid contents (DNA & RNA), the respiratory rate and the rate of cell division (Mitotic index). While the high concentration of brassinolide caused high significant reduction in these parameters. The percentage of unsaturated fatty acids, oil contents and iodine value were increased when the low concentrations of brassinolide were used, while a reverse pattern was observed in seedlings by using the high concentration of brassinolide.

Also, in this investigation, the effect of brassinolide on the two cultivars of *Nigella sativa* plants produced from the seed previously presoaked in the different concentrations of brassinolide or treated with foliar spraying were studied. The results revealed that, the low concentrations of brassinolide caused high significant increases in the morphological criteria, yield components, photosynthetic pigments, total carbohydrates, total nitrogen, total protein and nucleic acid contents of the two cultivars of *Nigella sativa* plants at all stages of plant growth and development. While the highest concentration (1.0 ppm) of brassinolide resulted in a reduction in these parameters.

Key words: *Nigella sativa*, Brassinolide, growth, yield, metabolism

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ABBREVIATION

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Abbreviations	Meaning
A.O.A.C.	Association of Official Analytical Chemists
A\Bis	Acrylamide\bisacrylamide
Aps	Ammonium persulphate
BDH	British Drug House
BRs	Brassinosteroids
cv.	Cultivar
DEGS	Di ethylglycol succinate
DNA	Deoxyribonucleic acid
DPA	Diphenylamine
GLS	Gas Liquid Chromatography
KDa	Kilodalton
L.S.D.	Least significant difference
M.I	Mitotic index
M.S.I.	Mitotic index stage
M.Wt	Molecular weight
MAR	Mean Arm Ratio
ppm	Part per million
RM	Mobility rate
RNA	Ribonucleic acid
SDS-PAGE	Sodium dodecyl sulphate polyacrelamide gel electrophoresis
TAR	Total Arm Ratio
TCA	Trichloroacetic acid
TCL	Total Chromosome Length
TEMED	Tetramethylethylene diamine
Tris\Hcl	Tris hydroxyl methylamine hydrochloride

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