AIN SHAMS UNIVERSITY
FACULTY OF EDUCATION
DEPARTMENT OF BIOLOGICAL
& GEOLOGICAL SCIENCES

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

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BY

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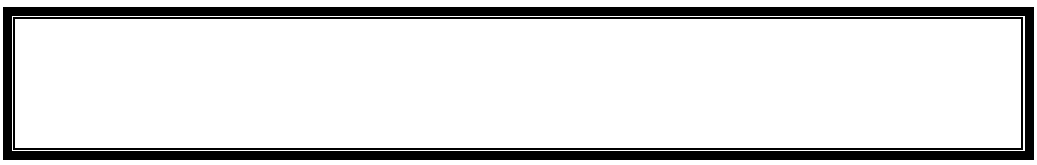

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ABSTRACT

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

CONTENTS

ABBREVIATIONS

Abbreviations	Meaning
A.O.A.C.	Association of Official Analytical Chemistis
A\Bis	Acrylamide\bisacrylamide
Aps	Ammonium persulphate
BDH	British Drug House
BRs	Brassinosteroids
cv.	Cultivar
DEGS	Di ethylglycol succsinate
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

LIST OF FIGURES