

THEMES OF SCIENCE ON THE CREATING MOMENTS
OF ANTIQUARIAN ENIGMAS IN *Asinara*
complex CULTURES


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EFFECTS OF SALINITY ON THE SPECIFIC ACTIVITIES OF ANTIOXIDATIVE
ENZYMES IN *Aglaonema simplex* CULTURES

By

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Research Report submitted in partial fulfillment of
the requirements for degree of
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LIST OF ABBREVIATIONS

ABA	Absisic acid
APX	Ascorbate peroxidase
CAT	Catalase
Cl ⁻	Chloride ion
CO ₂	Carbon dioxide
DNA	Deoxy ribonucleic acid
EDTA	Ethylene Diamine Tetraacetic Acid
Fe-SOD	Ferum superoxide dismutase
GPX	Glutathione peroxidase
GR	Glutathione reductase
g/L	gram per litre
GSH	Glutathione
GSSG	Oxidized glutathione
H ₂ O ₂	Hydrogen Peroxide
mM	milimolar
Mg ²⁺	Magnesium ion
Mn-SOD	Mangan superoxide dismutase
Na ⁺	Sodium ion
NaCl	Sodium chloride
O ₂ ^{·-}	Superoxide radical
OH [·]	Hydroxyl radical
PMs	plasma membranas
POD	Peroxidase
RNA	Ribonucleic acid
ROS	Reactive oxygen species

SO_4^{2-}	Sulphate ion
SOD	Superoxide dismutase
Zn-SOD	Zinc superoxide dismutase
$^{\circ}\text{C}$	degree celcius

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ABSTRACT

Aglaonema simplex are among popular ornamental plants which are suitable for household and office decoration. They are highly adapted to light intensity, resistant to pest and not much effort needed to grow this kind of species. The effects of NaCl treatment on the specific activities ascorbate peroxidase (APX), catalase (CAT) and guaiacol peroxidase (POD) were investigated in *Aglaonema simplex* cultures. The *A. simplex* plantlets were treated with 0, 25, 50 or 100mM of NaCl in Murashige and Skoog solid medium for 28 days. The activities of these antioxidative enzymes were detected at 0, 1, 2, 7, 14 and 28 days of treatment periods. Generally, APX, CAT and POD exhibited similar pattern in response to NaCl treatment. No significant differences ($P>0.05$) were observed in APX, CAT and POD specific activities were observed up to 7 days of treatment periods. After 7 days, the specific activities of all enzymes markedly increased ($P<0.05$) to a maximum activities. Specific activities of each enzymes decreased significantly at the later stage of treatment periods. Above result revealed that NaCl treatment induced by oxidative stress in *A. simplex* cultures inducing the APX, CAT and POD specific activities.

KESAN SALINITI KE ATAS AKTIVITI SPESIFIK ENZIM ANTIOKSIDATIF TERHADAP KULTUR *Aglaonema simplex*.

ABSTRAK

Aglaonema simplex adalah sejenis tumbuhan hiasan yang popular sesuai ditanam di pejabat atau rumah kerana spesies ini boleh beradaptasi dalam keamatan cahaya yang tinggi, tidak memerlukan penjagaan yang rapi dan ia juga tahan kepada serangan serangga perosak. Kesan NaCl keatas aktiviti spesifik pada APX, CAT dan POD telah dikaji pada kultur *A. simplex*. *A. simplex* telah dirawat pada kepekatan NaCl yang berbeza iaitu 0, 25, 50 dan 100mM di dalam medium Murashige dan Skoog selama 28 hari. Umumnya, APX, CAT dan POD menunjukkan tindakbalas kepada NaCl pada corak yang sama. Tiada perbezaan yang ketara ($P>0.05$) diperhatikan pada aktiviti spesifik APX, CAT dan POD sepanjang 7 hari rawatan. Selepas 7 hari, aktiviti spesifik semua enzim telah meningkat dengan kadar yang maksimum. Aktiviti spesifik ini kemudiannya menurun pada peringkat akhir rawatan. Keputusan menunjukkan rawatan NaCl meningkatkan tegasan oksidatif pada kultur *A. simplex* dan meningkatkan aktiviti spesifik enzim APX, CAT dan POD.