

EFFECT OF SALINITY ON THE SPECIFIC
ACTIVITIES OF AMINO ACID ENZYMES IN
Cryptosporidium parvum CULTURES

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EFFECT OF SALINITY ON THE SPECIFIC ACTIVITIES OF ANTIOXIDATIVE
ENZYMES IN *Cryptocoryne elliptica* CULTURES

By

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LIST OF ABBREVIATIONS

ABS	-	Absorbance
APx	-	ascorbate peroxidase
BSA	-	Bovine Serum Albumin
CAT	-	catalase
cm	-	centimeter
gm	-	gram
g/L	-	gram per liter
h	-	hour
H ₂ O ₂	-	hydrogen peroxide
M	-	Molar
mg	-	milligram
ml	-	milliliter
mM	-	milimolar
NaCl	-	sodium chloride
nm	-	nanometer
POD	-	peroxidase
ROS	-	reactive oxygen species
rpm	-	revolution per minutes
U	-	Unit
°C	-	degree celcius
µg	-	microgram
µl	-	microliter
µmol	-	micromolar

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ABSTRACT

Salinity is an ecological factor of considerable importance which influences the plants growth. Salinity tolerance is important to regulate defense mechanism which prevents the plant damages. The effect of NaCl treatments on specific activities of antioxidative enzymes in aquatic plant, *Cryptocoryne elliptica* cultures was determined. *C. elliptica* cultures were treated with 0, 25, 50 and 100 mM of NaCl for 28 days in B5 solid medium. Catalase (CAT), ascorbate peroxidase (APx) and peroxidase (POD) specific activities were measured every 0, 1, 2, 7, 14 and 28 days of treatment periods. NaCl treatments initially induced CAT specific activities and decreased significantly ($P < 0.05$) at the later stages of treatment periods. NaCl treatments did not significantly ($P > 0.05$) affect the APx specific activities up to 14 days of treatment period. Longer treatment period significantly increased the APx specific activities of *C. elliptica* cultures. Similar results were observed in POD specific activities in this aquatic plant. These results suggest that the salinity treatment stimulates oxidative stress in *C. elliptica* cultures by inducing the APx and POD specific activities associated with the decrease in CAT specific activities especially at the later stages of treatment periods.

**KESAN SALINITI KEATAS AKTIVITI
SPESIFIK ENZIM ANTIOKSIDATIF DALAM KULTUR *Cryptocoryne elliptica***

ABSTRAK

Saliniti merupakan faktor ekologi yang penting dimana ia mempengaruhi pertumbuhan tumbuhan. Toleransi terhadap saliniti penting dalam pengawalan mekanisme pertahanan bagi mengelakkan kemusnahan pada tumbuhan. Kesan kepekatan NaCl terhadap aktiviti spesifik enzim antioksidatif dalam kultur tumbuhan akuatik, *Cryptocoryne elliptica* ditentukan. Kultur *C. elliptica* di rawat dengan 0, 25, 50 dan 100 mM NaCl selama 28 hari di dalam media pepejal B5. Aktiviti spesifik enzim katalase (CAT), askorbat peroksidase (APx) dan peroksidase (POD) diukur setiap 0, 1, 2, 7, 14 dan 28 hari rawatan. Rawatan NaCl pada mulanya meningkatkan aktiviti spesifik enzim CAT dan semakin berkurangan di akhir tempoh rawatan. Rawatan NaCl tidak mempengaruhi aktiviti spesifik enzim APx sehingga hari ke-14 rawatan. Tempoh rawatan yang lebih panjang akan meningkatkan aktiviti spesifik enzim APx secara signifikan bagi kultur *C. elliptica*. Keputusan yang sama diperolehi bagi aktiviti spesifik enzim POD dalam tumbuhan akuatik ini. Keputusan yang diperolehi menunjukkan rawatan saliniti akan mencetuskan tegasan oksidatif dalam kultur *C. elliptica* dengan meningkatkan aktiviti spesifik enzim APx dan POD dan juga penurunan aktiviti spesifik CAT terutamanya di akhir tempoh rawatan.