

IMMUNE RESPONSE OF COMMON CARP (*Cyprinus carpio* L.),
TO CORTISOL SIMULATED STRESS

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SERDANG, SELANGOR
1993

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*To my parents, Joseph and Lucy.
Your love and sacrifice for me will not be forgotten.
To Ivy, thank you for being my inspiration.*

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TERENGGANU

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TO CORTISOL SIMULATED STRESS**

By

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ABSTRACT

The immune response of matured common carp (*Cyprinus carpio* L.) under cortisol-mediated stress was investigated. Humoral mediated response at the cellular and serum level after challenge with *Aeromonas hydrophila* following a single intraperitoneal cortisol implant of 30 $\mu\text{g/g}$ bwt. was assessed by using the passive haemolytic plaque technique and indirect haemagglutination test respectively.

The study indicates that cortisol treatment clearly evoked a suppression on the immune system, hence predisposing the fish to disease. Haemolytic plaque forming cells which represents the antibody forming cells were found to be markedly reduced in cortisol treated carps. Likewise, serum antibody level in carps treated with cortisol also decreased quantitatively. The proportional relationship between the occurrence of plaque forming cells (PFC) and the serum antibody titer level demonstrated that serum antibody is the derivative of the PFC response.

The results of this study indicated that cortisol-induced stress at the chosen level was sufficient in predisposing the carps to infectious disease..

ABSTRAK

Kesan stress aruhan menggunakan kortisol terhadap tindakbalas imun pada ikan kap dewasa (*Cyprinus carpio*) telah dikaji. Tidakbalas humoral pada tahap selular dan serum terhadap antigen diikuti dengan pengimplanan kortisol tunggal dengan dos 30 $\mu\text{g/g}$ berat badan secara intraperitonil dinilai dengan menggunakan teknik plak hemolitik pasif dan hemaglutinasi tidak langsung.

Kajian ini menunjukkan bahawa rangsangan kortisol menyebabkan berlakunya penekanan keatas sistem keimunan yang seterusnya menyebabkan ikan mudah terdedah kepada jangkitan penyakit. Kajian ini juga menunjukkan bahawa ikan yang telah dirawat menggunakan kortisol mempunyai sel antibodi yang rendah seperti yang diwakili oleh pembentukan plak hemolitik. Disamping itu, tahap serum antibodi juga berkurangan secara kuantitatif. Hubungan rapat diantara kewujudan sel pembentuk plak dengan tahap serum titer antibodi menunjukkan bahawa serum antibodi berpunca daripada tindakbalas sel pembentuk plak.

Keputusan kajian ini menunjukkan bahawa stress aruhan menggunakan kortisol pada dos yang dipilih adalah memadai untuk menyebabkan penyakit pada ikan kap.