THE EFFECT OF SERIAL PASSAGE ON THE EXTRA CELLULAR PRODUCTS AND VIRULENCE OF AN *Aeromonas hydrophila* ISOLATED FROM EPIZOOTIC ULCERATIVE SYNDROME (EUS) POSITIVE FISH

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BY

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Dedicated to

nature,

it's beauty,

mysteries and

the many challenges

it poses to

science and mankind.

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ABSTRACT

A study on the effect of serial passage through fish and agar media on toxin production and resulting virulence of two strains (virulent and avirulent) of *Aeromonas hydrophila* was studied. The study included quantitative analysis of haemolysins and cytotoxins production by the bacteria. Serial passage through live fish was found to increase the production of toxins in the virulent strain. Passage through agar media clearly showed a decrease in toxin production for both the virulent and avirulent strains. Virulence assays carried out in fish were not sensitive enough to detect the progressive increases in toxin production within a single strain. Cytotoxin and haemolysin production increased only during the passages through fish. It was found that quantification of toxin production within a single strain requires a more sensitive assays than those employed during the present study. Usage of cell lines to detect changes in toxin production proved to be the best method. The importance of quantification of toxin production with respect to pathogenicity and virulence studies of *A. hydrophila* are discussed.

ABSTRAK

Satu kajian terhadap kesan pasaj yang berturutan dalam ikan dan media agar terhadap keupayaan pengeluaran toksin dua isolat (virulen dan tidak virulen) *Aeromonas hydrophila* telah dijalankan. Kajian ini telah juga melibatkan analisa kuantitatif ke atas hemolisin dan sitotoksin yang dikeluarkan oleh bakteria. Pasaj berturutan melalui ikan yang hidup didapati meningkatkan pengeluaran toksin dalam isolat yang virulen. Pasaj melalui agar jelas menunjukkan pengeluaran toksin yang berkurangan untuk kedua-dua isolat virulen dan bukan virulen. Ujikaji virulen yang dijalankan melalui suntikan ke dalam ikan didapati tidak peka dan kurang berkesan untuk mengesan penghasilan toksin yang meningkat bagi isolat yang sama. Sitotoksin dan hemolsin didapati hanya meningkat dalam pasaj melalui ikan. Didapati bahawa analisa kuantitatif terhadap pengeluaran toksin satu isolat memerlukan kajian-kajian yang lebih peka daripada yang telah digunakan dalam kajian ini. Pengunaan kultur sel untuk mengesan perubahan dalam pengeluaran toksin didapati paling berkesan. Prosedur dalam analisa toksin perlu diselaraskan dalam kajian-kajian kepatogenan dan kajian virulen bakteria.