

CELL SURFACE CHARACTERISTICS OF
AEROMONAS HYDROPHILA ISOLATED FROM
EPIZOOTIC ULCERATIVE SYNDROME (EUS)
POSITIVE AND NEGATIVE FISH

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BY

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ABSTRACT

Five strains of *Aeromonas hydrophila*, isolated from epizootic ulcerative syndrome (EUS) positive and negative fish, were screened for their virulence using a number of cell surface characteristics. The virulence assay performed using big head carp (*Aristichthys nobilis*) fingerlings showed that four of the isolates were virulent to the fish. The virulent isolates exhibited an LT_{50} of 96 hours and below, following intraperitoneal injection of 0.5 ml bacteria at 10^4 cells/ml. The avirulent isolate had an LT_{50} of more than 96 hours at the same concentration. The transmission electron microscopic (TEM) studies revealed that only the virulent isolates possess fimbriae when grown in static broth cultures and agar slants. Generally, fimbriae were profuse and longer in the virulent bacteria cultured in broth. No A-layers were observed in any of the isolate under TEM.

All isolates displayed haemagglutinating abilities, which made it difficult to relate this property with their pathogenicity to fish. Hydrophobicity did not show any correlation to the degree of virulence of the isolates. Only the virulent isolates agglutinated in acriflavine (ACR^+). All isolates exhibited precipitation after boiling (PAB^+) suggesting that there is no relationship between PAB^+ ness and the degree of virulence of the isolates. The results obtained from the five isolates tested, showed that there was no direct relationship between the possession of an A-layer, haemagglutination, hydrophobicity and PAB^+ with the degree of virulence of the isolates. However, the presence of fimbriae and agglutination in acriflavine could be used for screening *Aeromonas hydrophila* isolates for their virulence to fish.

ABSTRAK

Lima strain *Aeromonas hydrophila* yang diisolatkan daripada ikan yang menunjukkan jangkitan positif dan negatif terhadap "epizootic ulcerative syndrome" (EUS), telah diuji virulen mereka dengan menggunakan beberapa ciri permukaan sel. Asei virulen yang dijalankan dengan menggunakan anak ikan kap kepala besar (*Aristichthys nobilis*) menunjukkan empat dari lima *A. hydrophila* isolat adalah virulen terhadap ikan tersebut. Isolat yang virulen menunjukkan LT_{50} bernilai 96 jam dan ke bawah, selepas diberi suntikan secara intraperitonil 0.5 ml bakteria pada kepekatan 10^4 sel/ml. Isolat yang tidak virulen mempunyai LT_{50} melebihi 96 jam pada kepekatan bakteria yang sama. Kajian mikroskop elektron transmisi (TEM) menunjukkan hanya isolat virulen mempunyai fimbria apabila dikultur di dalam kaldu dan agar condong. Secara amnya, fimbria adalah lebih banyak dan panjang pada bakteria virulen yang dikultur dalam kaldu. Tiada lapisan "A-layer" diperhatikan di mana-mana isolat di bawah TEM.

Kesemua isolat menunjukkan kebolehan hemaglutinasi, membuatkan ciri ini susah dikaitkan dengan kepatogenan terhadap ikan. Hidrofobisiti tidak menunjukkan sebarang korelasi dengan darjah kevirulenan isolat tersebut. Hanya isolat yang virulen menggumpal dalam akriflavin (ACR^+). Kesemua isolat menunjukkan pemendakan selepas pendidihan (PAB^+), menyarankan bahawa perhubungan di antara ciri PAB dengan darjah kevirulenan isolat tidak wujud. Keputusan yang diperolehi daripada lima isolat yang diuji ini menunjukkan yang tiada perhubungan secara langsung di antara kedapatan lapisan "A-layer", hemaglutinasi, hidrofobisiti dan PAB dengan darjah kevirulenan isolat.

Walau bagaimanapun, kehadiran fimbria dan penggumpalan dalam akriflavin boleh digunakan untuk menguji kevirulenan isolat *Aeromonas hydrophila* terhadap ikan.

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