

A Serological Study on *Edwardsiella tarda* Strains Isolated from Diseased Japanese Flounder (*Paralichthys olivaceus*)

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Edwardsiella tarda has been isolated from various kinds of animals and comprises many serotypes¹⁾. It was reported that there were some different serotypes (A, B, C) among *E. tarda* strains isolated from eels and their environments, and type A was the most virulent as assessed from experimental infections in eels and some other fishes²⁾. The present work was undertaken to study the serological relationship among *E. tarda* strains isolated from diseased flounder.

Materials and Methods

Twenty-eight strains of *E. tarda* isolated from diseased flounder were tested. These strains were isolated from cultured flounder with typical signs of edwardsiellosis in Hiroshima, Shimane, Ehime, Nagasaki, Kyoto, Aichi and Shizuoka Prefectures. Detailed biochemical characterization of the strains was done, and all the strains were confirmed to be *E. tarda*. Three different serotype (A, B, C)²⁾ strains from eel and its environment were used as reference strains. Their sources are summarized in Table 1. An antiserum was raised against *E. tarda* NUF251

(from diseased flounder) by immunizing a rabbit with formalin-killed cells. Agglutination titrations of the antiserum starting from 5-fold dilution (minimum titer was 1:20) were performed using micro-titer plates against formalin-killed (formalin 0.3%) and heat-killed (boiled for 2.5 h) cells of all the strains.

Results and Discussion

Agglutination titers of the antiserum for all the strains from diseased flounder were 320-1280 for formalin-killed cells and 160-320 for heat-killed cells (Table 1), indicating that all the 28 strains of *E. tarda* isolated from diseased flounder are serologically homogeneous and belong to one O-serotype. A reference strain (E22, isolated from diseased eel) belonging to serotype A reacted with the antiserum at almost the same titers as flounder strains. It was also confirmed by a cross absorption test that agglutinability of the antiserum to NUF251 and E22 was completely lost by absorption with E22 and NUF251, respectively. Thus the serotype of all the flounder strains used was identical to type A of eel strains. These results suggest that only one serotype of *E. tarda* was associated with edwardsiellosis in cultured flounder.

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References

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Table 1. Agglutination titers of anti-*E. tarda* NUF251 rabbit serum against 31 strains of *E. tarda*

Source	No. of strain	Serotype ¹⁾ (Strain)	Titer	
			FK ²⁾	HK ³⁾
Flounder diseased	28		320-1280	160-320
Eel diseased	1	A (E22)	320	160
healthy	1	B (SU138)	<20	40
Pond water (eel)	1	C (SU100)	<20	<20

¹⁾ According to Park *et al.* (1983).

²⁾ Formalin-killed cells.

³⁾ Heat-killed cells.