

Simple detection and differentiation of *Vibrio mimicus* from *V. cholerae* and *Vibrio* spp. by dot blotting

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Abstract

Monoclonal antibodies (MAbs) specific to *Vibrio mimicus*, a closely related bacteria to *V. cholerae*, were generated to facilitate the diagnosis of *V. mimicus* infection in human and shrimp. Six different groups of MAbs were isolated. The first three isolate-specific MAbs groups bound to only one or two isolates of *V. mimicus*. The fourth antibody group recognized all ten isolates of *V. mimicus*. The fifth and the sixth groups co-detected *V. mimicus* and *V. cholerae* and recognized all 10 isolates of *V. mimicus* and 23 isolates of *V. cholerae* tested. However, they recognized different antigens in Western blot analysis. All MAbs showed no cross-reactivity with other *Vibrio* species or other Gram negative bacteria and could be used to identify either *V. mimicus* or *V. cholerae* by dot blotting with a sensitivity ranging from 10^5 - 10^7 CFU/ml. The detection capability could be improved to 10 - 10^3 CFU/ml of the original bacterial content after pre-incubating samples in alkaline peptone water (APW) for 6 h prior to dot blotting. Monoclonal antibodies in groups 1-3 and 5 could detect *V. mimicus* and /or *V. cholerae* infection in shrimp tissues by immunohistochemistry. Thus, these MAbs constitute convenient immunological tools that can be used for simple and rapid direct detection and differentiation of *V. mimicus* and *V. cholerae* in complex samples, such as infected shrimp without the requirement for bacterial isolation or biochemical characterization.

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Key words: dot blotting, immunohistochemistry, monoclonal antibody, *Vibrio mimicus*, *V. cholerae*, Western blotting.