

Simple detection and differentiation of *Vibrio cholerae* serotypes O1, O139, O141 and non O1, O139, O141 with specific monoclonal antibodies

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Abstract

Combination of 4 serotypes of *V. cholerae*; O1, O139, O141 and non O1, O139, O141 (NVC) was used to immunize into mice for monoclonal antibody production. Four monoclonal antibodies (MAbs) specific to *V. cholerae* were obtained. The first MAb (VC-227) recognized all 8 isolates of *V. cholerae* serotype O1, both Inaba and Ogawa. The second MAb (VC-812) recognized all four isolates of *V. cholerae* serotypes O139. The third MAb (VC-26) recognized all 13 isolates of *V. cholerae* serotype O1, O139, and O141. The fourth MAb (VC-63) recognized all 25 isolates of *V. cholerae* O1, O139, O141 and NVCs. All MAbs did not show cross-reactivity with other *Vibrio* spp. including *V. mimicus*, the closely related species or other Gram negative bacteria. These MAbs can be used to detect *V. cholerae* contamination in various food products by dot blotting with the sensitivity range from 10^5 - 10^7 CFU/ml. The detection capability could be improved to 10^3 CFU/ml of the original bacterial concentration after pre-incubating samples in tryptic soy broth (TSB) for 6 h prior to dot blotting. Thus, these MAbs constitute convenient immunological tools that can be used for simple, rapid and simultaneously direct detection and differentiation various serotype of *V. cholerae* in complex samples such as shrimp sample, food sample, clinical sample as well as infected animal without the requirement for bacterial isolation and biochemical characterization.

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