

Prevalence and quantification of *Vibrio parahaemolyticus* in raw salad vegetables at retail level

ABSTRACT

The purpose of this study was to investigate the biosafety of *Vibrio parahaemolyticus* in raw salad vegetables at wet markets and supermarkets in Malaysia. A combination of the most probable number -polymerase chain reaction (MPN- PCR) method was applied to detect the presence of *V. parahaemolyticus* and to enumerate their density in the food samples. The study analyzed 276 samples of common vegetables eaten raw in Malaysia (Wild cosmos=8; Japanese parsley=21; Cabbage=30; Lettuce=16; Indian pennywort=17; Carrot=31; Sweet potato=29; Tomato=38; Cucumber=28; Four-winged bean=26; Long bean=32). The samples were purchased from two supermarkets (A and B) and two wet markets (C and D). The occurrence of *V. parahaemolyticus* detected was 20.65%, with a higher frequency of *V. parahaemolyticus* in vegetables obtained from wet markets (Wet market C=27.27%; Wet Market D=32.05%) compared with supermarkets (Supermarket A=1.64%; Supermarket B=16.67%). *V. parahaemolyticus* was most prevalent in Indian pennywort (41.18%). The density of *V. parahaemolyticus* in all the samples ranged from <3 up to >2,400 MPN/g, mostly <3 MPN/g concentration. Raw vegetables from wet markets contained higher levels of *V. parahaemolyticus* compared with supermarkets. Although *V. parahaemolyticus* was present in raw vegetables, its numbers were low. The results suggest that raw vegetables act as a transmission route for *V. parahaemolyticus*. This study will be the first biosafety assessment of *V. parahaemolyticus* in raw vegetables in Malaysia.

Keyword: *Vibrio parahaemolyticus*; Most Probable Number (MPN), Polymerase Chain Reaction (PCR); Raw vegetables; Prevalence; Quantification