Abstract

Published studies on the pathogenicity, occurrence in the marine environment and depuration from oysters of *Vibrio vulnificus*, and on the cultivation and postharvest handling of Sydney rock oyster (SRO) are reviewed.

Experiments on *V. vulnificus* isolation and enumeration, uptake and depuration from SRO as affected by water temperature and salinity, association with SRO biodeposit and shell, and survival in SRO meat during storage, were conducted.

Peptone (0.1%) solution containing 3% NaCl was a more suitable diluent than phosphate buffered saline solution for the enumeration of *V. vulnificus* by plate count and most probable number methods. A modified cellobiose polymyxin *B colistin* agar medium was developed to optimise the recovery of *V. vulnificus*. Five microanalytical systems were evaluated for confirmatory identification of the microorganism.

Vibrio vulnificus concentrated mainly in the visceral tissue during bioaccumulation. The shell and biodeposits of SRO shellstock challenged with estuarine water seeded with *V. vulnificus* also accumulated substantial levels of this species. Clearance of *V. vulnificus* from SRO shellstocks depurated for 48 h in an ultraviolet (UV) assisted system was mainly associated with the digestive area, and was more effective at 25 °C (2.5 log units) than at 20 °C. Water at 15 °C caused a rapid decline in pathogen in SRO meat, attributed to cold stress. More effective depuration of the pathogen at salinities >20 ppt was demonstrated with 3-3.5 log cycle decrease at 20 and 30 ppt, and 6-7 log cycle at 40 ppt. Cells associated with the shell were persistently attached to the external surface and resisted resuspension when exposed for 48 h to UV-sterilised estuarine water. Release of *V. vulnificus* from faecal material was related to overlying water temperature, exposure period and physical integrity of the biodeposit.

Low temperature (<10 °C) storage caused a substantial (1-3 log cycles) decline in the level of *V. vulnificus* cells in bottled, half shell meat and live shellstock. However, low storage temperatures cannot reliably reduce the concentration of the pathogen to undetectable levels within the shelf life of these products. Storage at 20 ° and 30 °C caused pathogen multiplication in all SRO products.