

Title Possible involvement of psychrotolerant Enterobacteriaceae in blown pack spoilage of vacuum-packaged raw meats

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Abstract

Recent investigations of blown pack spoilage in New Zealand chilled vacuum-packaged meats have found moderate to high numbers of Enterobacteriaceae in the spoilage flora, but no clostridia, such as *C. estertheticum* and *C. gasigenes*, that are usually associated with blown pack spoilage. This study showed that psychrotolerant Enterobacteriaceae produced gas in a lamb homogenate model under anaerobic conditions and that these organisms could cause blown pack spoilage of vacuum-packaged chilled meats. Significant gas production was observed with the majority of the psychrotolerant Enterobacteriaceae strains tested including presumptive species of *Enterobacter*, *Serratia*, *Hafnia* and *Rahnella*. However, no gas was produced in lamb homogenates inoculated with presumptive species of *Ewingella americana* or *Yersinia enterocolitica*. Gas production was also confirmed in vacuum-packaged lamb shoulders stored at 4 °C for 21 days after being inoculated with individual representative Enterobacteriaceae isolates. Biochemical characterisation proved to be more useful than genotype-based typing of 16S rRNA genes for discriminating different psychrotolerant Enterobacteriaceae from naturally contaminated meat microflora.