# Histamine production of *Morganella psychrotolerans* and antibacterial effect of peracetic acid to bacterial cells

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**【Objective】**: *M. psychrotolerans* (M.P.) is recently an identified psychrotolerant bacterium, which produces histamine even at 0 °C. Peracetic acid (PAA) has a strong antibacterial property and is recognized as one of sanitizers in fruits, vegetables, and meat surfaces. In this study, histamine production profile of M.P. was investigated at refrigeration temperature. Moreover, antibacterial efficacy and mechanism of PAA to M.P. were determined.

**【Materials and Methods】**: Histamine production of M.P. was evaluated in TSBH (Tryptic soy broth supplemented with 1 % L-histidine and 1.5% NaCl, pH 6.0) at 4 °C. Antibacterial effect of PAA (10-40 ppm) against M.P. in saline was investigated by viable cell counting using Tryptic soy agar (TSA) with 0.2 % sodium pyruvate and TSA with 5 % NaCl. Antibacterial mechanism of PAA were estimated by cell membrane integrity with Live/Dead staining kit. DNAs were analysed by staining with acridine orange (AO) staining and agarose electrophoresis. Protein profiles were determined by SDS-PAGE.

**【Results and Conclusion】**: The amounts of histamine produced by M.P. during the incubation were higher than those by *Photobacterium phosphoreum*, a psychrophilic histamine producer. M.P. was completely killed by the treatment of 20 ppm PAA for 5 min. Live/Dead staining revealed M.P. cell membranes were damaged by PAA treatment. However, AO staining and agarose electrophoresis suggested the DNAs inside of cells were not unwound and degraded. Some protein bands were not detected after treating with 20 ppm PAA for 5 min. From these findings, PAA led to M.P. death caused by changing the membrane permeability and degradation protein, and PAA treatment will be a the potential sanitizing strategy for removing M.P. from fish surface.