

Title Effects of bactericides and modified atmosphere packaging on shelf-life of Chinese shrimp (*Fenneropenaeus chinensis*)

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Abstract

Effects of different bactericides and modified atmosphere packaging (MAP) on aerobic plate counts (APCs), total volatile base-nitrogen (TVB-N) and organoleptic evaluation of overall acceptable score (OA score) of Chinese shrimp (*Fenneropenaeus chinensis*) during cold storage were investigated. Results indicated that APC in MAP(40%CO₂/30%O₂/30%N₂) shrimp treated with compound bactericide reached 10⁷ cfu/g on the 13th day of storage, while that of ozonated water or water control treatments exceed 10⁷ cfu/g on the 9th day. APC in shrimps treated with MAP (40%CO₂/30%O₂/30%N₂) or 100%CO₂ after soaking with compound bactericide reached close to 10⁷ cfu/g at day 13, while that of air treatment exceed 10⁷ cfu/g. TVB-N value in MAP(40%CO₂/30%O₂/30%N₂) shrimp treated with compound bactericide was slightly higher than the upper threshold of 30 mg/100 g on the 17th day, while that of ozonated water treatment or water control increased to or over the threshold value on the 9th day. TVB-N value in shrimps treated with MAP (40%CO₂/30%O₂/30%N₂) or 100%CO₂ after soaking with compound bactericide were significantly lower than that of air control on the 17th day ($P \leq 0.01$), with a value of 33.6 mg/100 g and 42–47.6 mg/100 g respectively, compared to 78.4–86.8 mg/100 g in air control. The lowest OA score of MAP(40%CO₂/30%O₂/30%N₂) whole and decapitated shrimps treated with compound bactericide appeared on the 17th and 21th day, respectively, compared with the 9th day in whole shrimp and the 13th day in decapitated shrimps treated with ozonated water and water control. The lowest OA score of whole and decapitated shrimps treated with MAP (40%CO₂/30%O₂/30%N₂) or 100%CO₂ after soaking with compound bactericide appeared on the 17th and 21th day, respectively, compared with the 13th and 17th day in air control. In conclusion, when combined the parameters determined together, the shelf-life of Chinese shrimp at 2 ± 1 °C, either whole or decapitated, treated with MAP (40%CO₂/30%O₂/30%N₂) and 100%CO₂ after soaking with compound bactericide were 13 and 17 days, respectively.