

Title Retardation of quality changes of Pacific white shrimp by green tea extract treatment and modified atmosphere packaging during refrigerated storage

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Abstract

The effect of modified atmosphere packaging (MAP) on the quality changes of Pacific white shrimp (*Litopenaeus vannamei*) treated with or without green tea extract (1 g/L; GTE) in combination with or without ascorbic acid (0.05 g/L; AA) during refrigerated storage of 10 days was investigated. Shrimp without treatment stored under MAP had lowered psychrotrophic bacteria, enterobacteriaceae and H₂S-producing bacteria count ($P < 0.05$) but similar lactic acid bacteria count ($P > 0.05$), in comparison with shrimp stored in air (control). The coincidental lowered rate of increase in pH, total volatile base (TVB) content and thiobarbituric acid reactive substances (TBARS) were obtained in shrimp stored under MAP ($P < 0.05$). However, MAP slightly lowered melanosis formation and improved likeness score to some extent. When shrimp were treated with GTE and stored under MAP, the lower microbiological and chemical changes as well as the lowest melanosis formation were observed, compared to shrimp kept under MAP without treatment and the control ($P < 0.05$). GTE treatment in combination with MAP could retard chemical changes and melanosis formation, regardless of AA incorporation ($P > 0.05$). Nevertheless, GTE in combination with AA had higher inhibition on microbial growth and yielded the shrimp with higher likeness, compared with the other treatments ($P < 0.05$). Therefore, shrimp treated with GTE in combination with AA prior to MAP had the lowest losses in quality during refrigerated storage.