

Title Effects of modified atmosphere and vacuum packaging on microbiological and chemical properties of rainbow trout (*Oncorhynchus mykiss*) fillets

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### Abstract

Microbial (psychrotrophic, mesophilic aerobic bacteria and *Enterobacteriaceae* counts), and chemical analysis [pH, total volatile bases nitrogen (TVB-N), lipid oxidation (Thiobarbituric acid reactive substance, TBARS)] of rainbow trout (*Oncorhynchus mykiss*) fillets in air (control), vacuum and modified atmosphere packaging (MAP) with various gas mixtures conditions at  $4\pm 1$  °C were determined. The gas mixtures evaluated were 100% CO<sub>2</sub>, 2.5% O<sub>2</sub>+7.5% N<sub>2</sub>+90% CO<sub>2</sub> and 30% O<sub>2</sub>+30% N<sub>2</sub>+40% CO<sub>2</sub>. Psychrotrophic bacteria count was above  $1\times 10^7$  cfu/g on the 12th day in 100% CO<sub>2</sub>. However; mesophilic bacteria count was below  $1\times 10^6$  cfu/g at the end of the 14-day storage period. *Enterobacteriaceae* count was significantly lower in samples packaged with MAP. Lipid oxidation increased rapidly after 6 days of storage in the samples containing 30% O<sub>2</sub>. While minimum TBARS values were recorded in fillets containing 100% CO<sub>2</sub> and vacuumed fillets, the lowest TVB-N values were obtained in fillets with 100% CO<sub>2</sub>.