

**Title** Combined effect of oregano essential oil and modified atmosphere packaging on shelf-life extension of fresh chicken breast meat, stored at 4 °C

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#### **Abstract**

The combined effect of oregano essential oil (0.1% and 1% w/w) and modified atmosphere packaging (MAP) (30% CO<sub>2</sub>/70% N<sub>2</sub> and 70% CO<sub>2</sub>/30% N<sub>2</sub>) on shelf-life extension of fresh chicken meat stored at 4 °C was investigated. The parameters that were monitored were: microbiological (TVC, *Pseudomonas* spp., lactic acid bacteria (LAB), yeasts, *Brochothrix thermosphacta* and *Enterobacteriaceae*), physico-chemical (pH, TBA, color) and sensory (odor and taste) attributes. Microbial populations were reduced by 1–5 log cfu/g for a given sampling day, with the more pronounced effect being achieved by the combination of MAP and oregano essential oil. TBA values for all treatments remained lower than 1 mg malondialdehyde (MDA) kg<sup>-1</sup> throughout the 25-day storage period. pH values varied between 6.4 (day 0) and 5.9 (day 25). The values of the color parameters L\*, a\* and b\* were not considerably affected by oregano oil or by MAP. Finally, sensory analysis showed that oregano oil at a concentration of 1% imparted a very strong taste to the product for which reason these lots of samples were not scored. On the basis of sensory evaluation a shelf-life extension of breast chicken meat by ca. 3–4 days for samples containing 0.1% oregano oil, 2–3 days for samples under MAP and 5–6 days for samples under MAP containing 0.1% of oregano oil was attained. Thus oregano oil and MAP exhibited an additive preservation effect.