

Abstract

Chicken Meat is a putrescent product that cannot be stored in cold conditions for more than 4 to 5 days. The aim of this study was to evaluate the effect of Persian gum coating incorporated with saffron extract (at 3 level 0, The minimum inhibitory concentration (MIC) and The minimum bactericidal concentration (MBC)) and nisin (at 2 level 0 and MIC) on physicochemical, microbial, and sensorial properties of chicken breast meat at 4°C for 12 days. Physical mechanical properties films (including solubility, moisture, thickness, water vapor permeability and oxygen, microscopic structure by scanning electron microscopy (SEM) investigated. Significant differences in terms of quality parameters were observed between the control samples (a and b) and coated chicken breast meat. The highest level of microbial number was observed in control a, (no wrapping, except for *pseudomonas spp*) during cold storage. The lowest total viable count was observed in PG-Nisin and PG-Nisin-Saffron (MBC) treatments. Similar impact intensity occurred in other microbial tests during refrigerated storage. Binary combination treatments of PG and saffron extract or nisin showed synergistic effects on controlling microbial growth. Evaluations on days 3 showed that combination treatments significantly controlled, pH value, peroxide value and reactive substances of thiobarbituric acid in comparison with the control treatments ($P < 0.05$). All of treatments retained the TVB-N content below 30 mg/100 g, which is an indication of meat freshness. The PG -Nisin - saffron (MBC) caused the lowest TVB-N value on days 6, 9 and 12 ($P < 0.05$). Based on the TVC ($< 10^7$ Log CFU/g) and the minimum score of acceptance (i.e. 5 points) the shelf life of Control a, PG, PG-Nisin, PG-Saffron (MIC), PG-Saffron (MBC), PG-Nisin-Saffron (MIC) and PG-Nisin-Saffron (MIC) samples were 6, 6, 12, ,9, 9, 9 and 12 days, respectively. Considering the higher overall acceptance score of PG-Nisin-Saffron (MBC) treatment than PG-nisin gum treatment at the end of the storage time, it is recommended as a new method for packaging chicken meat.

Keywords: Saffron, Persian gum, Edible film, Chicken meat, Shelf life



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**Application of novel edible active films of Persian
Gum-saffron on shelf life of chicken breast meat
during cold storage**

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