

Abstract

Chicken meat is the most popular and most widely used meat as a source of protein across the globe. Its high perishability owing to microbial infection and oxidation causes major food waste and associated health hazards. The current study involved the use of natural and organic antimicrobial compounds for the microbial safety of raw chicken meat. Cinnamon and clove essential oils along with lactoperoxidase enzyme were employed for the preservation and to increase the shelf life of chicken meat. The percentage yield of cinnamon oil was 5.52% and that of clove oil was 6.3%. The clove oil showed the highest antibacterial activity against *Staphylococcus aureus*, *Escherichia coli* and *Salmonella typhi*. The antifungal activity of cinnamon oil against *Aspergillus oryzae*, *Rhizopus oryzae* and *Aspergillus niger* was higher than clove oil. Microbiological analysis, nutritional composition, pH and TVB-N of stored meat was calculated from day 0 to day 12. The total plate count increased from day 0 to day 12 in control samples while it was less in the coated samples. Moreover, the amount of total and fecal coliforms, *E. coli*, *Salmonella*, *Staphylococcus* and yeast and molds in all the treated samples were reduced by the end of day 12. The moisture content in control samples reduced from 74.597% to 71.986% while it remained in the reference range in treated samples. The amount of fibre, ash, fat, protein, carbohydrates and energy (kcal) remained in standard value in all the samples. During storage, the colour, texture, hardness, smell and appearance of packed control samples changed and were acceptable only till day 6 but the treated samples retained their sensory attributes. The TVB-N values of coated samples was lower as compared to control samples. Overall, the treated samples remained fresh and lactoperoxidase and essential oils reduced the microbial load in the chicken meat. It is concluded that the lactoperoxidase enzyme and essential oils can be utilized for the preservation on chicken meat.