

The effect of orange peel essential oil on increase of the chicken fillet's shelf life

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Microbial growth and lipid peroxidation are primary factors of meat spoilage during refrigerated storage. Because of harmful effects of chemical preservatives harmful effects on the human health, the attention of researchers and people to the use of plant origin preservatives instead of chemical preservatives have been drawn. Due to the antioxidant effects of orange peel essential oil, it is a good choice as a natural antioxidant. Essential oil was prepared by soaking (immersion) method in an ethanol solvent. To this end, 50 g of orange dried peels with a 1: 1 solvent, 200 ml ethanol solution: the water was first mixed and the resulting mixture was placed in an ultrasound apparatus at 30 ° C and at a frequency of 50-60 Hz for 45 minutes. Essential oil was extracted according to the method of steam distillation using water. Then the GC analysis was performed to evaluate compositions of essential oil. EMB and MSA culture media were used to study the presence of Escherichia coli and Staphylococcus aureus respectively to determine the microbial load of chicken meat and isolate the existing microorganisms. Antibacterial activity of six concentration of orange peel essential oil (0.25%, 0.5%, 0.75%, 1%, 1.25%) was performed by well diffusion method in agar and measured by inhibitory halo. Three concentrations that showed the best results were ed to evaluate the effect of the extract on chicken meat shelf life at 4°C. For this purpose, meat samples were subjected to four treatments: T0(control), T1(0.75%), T2(1%) and T3(1.25%). Chemical tests including pH measurements, oxidation measurements, thiobarbituric acid, metmyoglobin, and microbial tests including total microbial load, counting Escherichia coli, Staphylococcus aureus, and coliform were evaluated on days 0, 3, 6, 9 and 12 with organoleptic analysis. The results indicated that incorporation of orange peel essential oil on chicken fillets caused the delay of lipid peroxidation and microbial spoilage. In this respect, the sample supplemented with 1.25% aqueous essential oil

was more effective compared with the 1.25% and 1% in extending the shelf life of chicken fillets (P

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