Effect of Marination with Fruit Juices and Vacuum Packaging on Quality Characteristics of Chicken Wings

R.A. Rupasinghe¹, S.K.D. Wijesinghe¹, A.G.A.W. Alakolanga² and D.D. Jayasena¹

¹Department of Animal Science, Uva Wellassa University, Badulla, Sri Lanka
²Department of Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka

Antioxidants present in fruits and vegetables have a potential to reduce disease risk, and increase the shelf life of food products by reducing lipid oxidation. The effect of marination with fruit juices rich in antioxidants [pineapple juice (PJ), mango juice (MJ) and June plum juice (JJ)] and vacuum packaging on sensory, physicochemical characteristics, and keeping quality of chicken wings stored under refrigerated condition were examined. Marinades were prepared with water (37%), fruit pulp (60%) and salt (3%). Chicken wings were marinated (1:1 w/w) and kept for 12 and 24 hrs separately. Raw chicken wings were taken as the control. Three best marination conditions were selected by a sensory evaluation. Selected samples and control were stored at 4°C under vacuum and normal packaging methods. Marinade uptake, marinade loss, and proximate composition were evaluated. In addition, pH, water holding capacity (WHC), color, TBARS value, antioxidant activity (AOA) using DPPH assay and total phenolic content (TPC) using Folin Ciocalteu method were measured over the storage for 2 wks. Results showed that, chicken wings marinated with PJ-24 hr, MJ-24 hr and JJ-12 hr had the best sensory properties (p<0.05). Marinade uptake was high in MJ-24 hr sample and marinade loss was high in JJ-12 hr sample. MJ had the highest AOA (92.2%) and TPC (38.45 µg/mL) followed by PJ and JJ (p<0.05). Marinated samples had higher ash content. Control had the highest pH and PJ sample had the highest WHC. pH and WHC were slightly decreased in vacuum packed samples and drastically decreased in normal packed samples with storage (p<0.05). Meantime, vacuumed packed chicken wings with MJ had the lowest TBARS value and microbial count. TBARS and microbial count values of vacuum packed chicken wings with MJ were within the permitted limits at 2 wk storage. Therefore, it can be concluded that marination with MJ followed by vacuum packaging increased meat quality traits and shelf life of chicken wings.

Keywords: Antioxidants, Shelf life, Lipid oxidation, Marinade, Meat quality traits