Application of Refuse Tea Water Extracts to Enhance Colour Stability of Chicken Burger Patties

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The colour of fresh meat is a key attribute that significantly influences consumer acceptability. Incorporation of antioxidants into fresh meat and meat products is a widely employed technique aimed at mitigating discolouration, lipid oxidation, and the development of off flavors. Therefore, the objective of this study was to investigate the potential of black tea waste (refuse tea) extract to extend the colour stability of uncooked chicken meat during their refrigerated and frozen storage. Samples of patty were prepared after mixing ground chicken meat with two concentrations of refuse tea extracts (0.05% and 0.1% w/w). Patties were then stored at 4^{o} C (refrigerated storage) and -18^{o} C (frozen storage) along with control samples (no antioxidants added negative control and $FeSO_4$ added as a positive control). Colour measurements (CIE L*, a*, and b* values) were taken at 1-day and 1-week intervals. Total plate count (TPC) was measured for refrigerated and frozen samples at the respective storage intervals. The a* values, which represent how red the meat is, were higher at the beginning and subsequently decreased across all treatments during storage. During the refrigerated storage, patty samples showed higher a* values than the standard value (20) up to day 5, except for control samples. For the frozen storage, a* values were maintained above 20 for a 6-week period, showing the potential colour-stabilizing properties of the tea extracts. Refused tea-treated samples had lower TPC ($p< 0.05$) and exhibited superior acceptability compared to the control samples in terms of colour preference and overall acceptability ($p< 0.05$). Overall, the chicken patty treated with 0.1% tea extract showed the highest colour stability, along with lower microbial counts and higher overall acceptability. Therefore, tea extracts, as a natural source of antioxidants, offer a promising way to enhance colour retention in uncooked meat products.

Keywords: Antioxidant, Attribute, Discolouration, Acceptability, Colour stability