

Effects of Promolux Platinum on Shelf Life of Ground Beef Patties

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Promolux platinum LED (PPLED) has a balanced color spectrum with additional deep red and deep blue. These advantages may be beneficial for fresh meat color stability. PPLED also used in retail display case has an economical saving in energy use and generates less heat compared with fluorescent (FLS) lighting. The objective of this study was to determine the effects of PPLED on instrumental meat color and shelf-life properties of ground beef patties compared to FLS and the control (no light) treatments. For each treatment, three replications, 115 g of beef patties were used. Treatments were evaluated for % drip loss, pH value, % moisture content, color (L^* , a^* and b^* values), lipid oxidation (thiobarbituric acid-reactive substances (TBARS) protocol), aerobic plate count (APC), *Escherichia coli* (*E. coli*) and *Salmonella* spp. every 3 days for 9 days. As expected, the pH values for all treatments increased ($P < 0.05$) with storage time. All treatments showed modest increase in % drip loss ($P < 0.05$), but were lower in the PPLED (0.60%) at day 7. The a^* value, a measurement of redness, declined marginally during the experiment regardless of lighting technique. However, the a^* value was slightly greater in the beef patties under PPLED lighting than FLS. As expected TBARS values increased ($P < 0.05$) throughout the storage time. However, PPLED treatment exhibited lower TBARS values (1.67 mg MDA/kg) than the remaining treatments. Lighting type had no effect ($P > 0.05$) on APC except for PPLED had lower APC populations (3.03 log CFU/g) than FLS (3.95 log CFU/g) and control (4.51 log CFU/g). In addition, there was no *E. coli* and *Salmonella* spp. found in this study. Our overall findings suggest that PPLED lighting is an effective light source for showing accurate color and reducing lipid oxidation in beef patties.