

Use this page to provide an abstract (up to 350 words) outlining the research described in your poster. **This OUTLINE MUST BE APPROVED AND SIGNED BY THE DEPARTMENT HEAD OR MAJOR PROFESSOR.** (Note: *email notification by your advisor to Ms. Debbie Koch can be substituted for the signature*)

Title: Antimicrobial Activity of Photosensitizer Curcumin and Its Potential Application on Chicken

Introduction: The European Union has prohibited the import of poultry exposed to chlorine since 1997.

Additionally, the concept of natural ingredients become more and more popular. Therefore, alternatives to chemical interventions are needed. The photosensitizer curcumin (PSC) was found to inactivate a variety of microorganisms. However, studies on its food application and its impact on food quality remain limited.

Purpose: The goal of this research was to investigate the antimicrobial efficacy of water-soluble PSC and the impact of PSC on chicken skin color.

Method: The absorption spectrum of PSC was determined by UV-Vis spectroscopy. LED (430nm, 107W/m²) was chosen to activate PSC. The antimicrobial activities of PSC on *Listeria monocytogenes* (3 isolates), *Escherichia coli* O157:H7 (2 isolates), and *Salmonella* (8 isolates) were evaluated on both media and chicken skin. The effects of interaction and illumination time were also studied. Skin color (L*, a*, and b*) was considered as statistically significant.

Results: PSC showed strong absorption at 410nm. Both light source and photosensitizer were required to induce antimicrobial activities under the conditions evaluated. Treatment with 0.02% PSC resulted in maximum 5.1- and 3.6-log reduction on *E. coli* O157:H7 and *Salmonella* on media, respectively. *Listeria monocytogenes* was inactivated by 0.003% of PSC on media; meanwhile, it was reduced from 5 to approximate 3 log CFU/cm² on chicken skin, after 5-min interaction with 0.03% PSC and 5-min illumination. There were no significant differences in antimicrobial activities among different interaction time (1, 2.5 and 5min) or illumination time (1, 5 and 10min). Meanwhile, no significant color change was observed on skin exposed to 5-min illumination or more.

Significance: This research suggests that PSC effectively inactivates foodborne pathogens and has potential application as antimicrobial intervention during poultry processing.

The above, proposed plan of research is approved and accepted.

DATE

SIGNATURE OF DEPARTMENT HEAD OR MAJOR PROFESSOR - PRINT NAME