ABSTRACT

Chicken is a widely consumed source of animal protein globally, valued for its high protein content and essential nutrients. Ensuring the freshness of chicken meat is crucial to guarantee its healthiness and prevent harm to consumers. Unfortunately, there are concerns about the use of hazardous substances like formaldehyde by some traders for meat preservation. Formalin, a clear liquid with a pungent odor, is commonly utilized as a food preservative. To address the misuse of formaldehyde in broiler chickens, an innovative solution is proposed involving IoT technology and Fuzzy Logic. The developed formaldehyde detection system employs an ESP8266 microcontroller and a TCS3200 sensor to assess color variations in chicken meat samples mixed with Schiff's reagent. The TCS3200 sensor detects color changes, and the ESP8266 Microcontroller converts measurements into RGB basic colors. Calibration of the sensor yielded a 98.30% relative accuracy at a 3 cm distance. Fuzzy Logic is then applied to determine formaldehyde levels, displayed on an LCD screen. The tool exhibits a 95% reliability for achieving a 0 ppm level, 93% for 40 ppm, 92% for 80 ppm, and 100% for 200 ppm.

Keywords : sliced chicken meat, formalin, color sensor TCS3200, esp8266, lcd, iot, Schiff reagent, RGB color