ABSTRACT

Wet noodles are a popular food item in society; however, their limited shelf life often leads to rapid spoilage and fungal contamination. In this current era of technological advancement, the detection of hazardous chemical substances in food can be achieved through various methods, one of which involves the utilization of chemical reagents and color sensors. The use of formalin as a preservative in wet noodles presents a significant health risk to humans; hence, the need arises for a method to detect wet noodles containing formalin. One such approach employs the TCS3200 sensor, where samples of wet noodles containing formalin are subjected to grinding. Subsequently, filtrates are obtained and treated with KMnO4 reagent, typically with 3 to 4 drops, to observe resulting color changes. The TCS3200 sensor then reads and records the color changes occurring in each filtrate sample of formalin-infused wet noodles at varying concentrations, namely 0 PPM, 20 PPM, 40 PPM, 60 PPM, 80 PPM, 100 PPM, 125 PPM, 150 PPM, 175 PPM, and 200 PPM. The detected RGB values from these color changes are further processed using a microprocessor, specifically the Raspberry Pi 3 Model B+, to calculate the percentage of RGB in each sample. It is observed that all wet noodle samples treated with the KMnO4 reagent exhibit a brownish color change, indicative of a positive presence of formalin. The detected formalin levels are categorized into four groups: Negative, Low Positive, Moderate Positive, and High Positive. Negative formalin is identified at a concentration of 0 PPM, Low Positive is found at 20 PPM, 40 PPM, and 60 PPM, while Moderate Positive is observed at concentrations of 80 PPM, 100 PPM, and 125 PPM. High Positive formalin is identified at concentrations of 150 PPM, 175 PPM, and 200 PPM.

Keywords: Sensor, Formalin, Wet Noodles, Raspberry Pi 3 Model B+