

## **Use of Natural Plant Extracts to Detect the Adulteration of Milk**

**H. M. D. Wasundara<sup>1</sup>, K. H. T. Karunarathna.<sup>1\*</sup>, and D. N. Kannangara<sup>1</sup>**

<sup>1</sup> *Department of Biosystems Technology, Faculty of Technology, University of Ruhuna, Matara, Sri Lanka.*

*\*thissa@btec.ruh.ac.lk*

### **Abstract**

The detection of adulteration of raw milk in field is an essential process to maintain the quality of dairy products. Industrially acceptable pH range for raw milk is pH 6.6 - 6.8. This study was designed to propose alternative indicators to identify deteriorated raw milk using water and ethanol extracts of e. i. flower petals of *Hibiscus rosa-sinensis* L. (Shoe-Flower) and *Clitoria ternatea* (Butterfly Pea), *Curcuma longa* (turmeric) rhizome and *Brassica oleracea* (red cabbage) leaves in central stem. Each plant extract was tested with pasteurized raw milk to evaluate the color change within pH range of 6.0 to 7.0. The *Hibiscus rosa-sinensis* L flower ethanol extract (pH 7.0; gray, pH 6.6 – 6.8; grayish light pink and pH 6.0; light pink) and *Brassica oleracea* water extract (pH 7.0; bluish gray, pH 6.6 – 6.8; Light purple and pH 6.0; Pinkish light blue) were opted. The other tested plant extracts were not observed noticeable and significant in terms of color variation with the pH change. The color variation was analyzed by using a CM-5 konica Minolta spectrophotometer. According to the results, color values (L values) for ethanol extract of *Hibiscus rosa-sinensis* L flower were pH 7.0; 1.88, pH 6.6; 2.17 and pH 6.0; 2.33 and water extract of *Brassica oleracea* were pH 7.0; 1.52, pH 6.6; 1.41 and pH 6.0; 1.84. In conclusion, it was demonstrated that the potential use of ethanol extract of *Hibiscus rosa-sinensis* L. flower and water extract of *Brassica oleracea* can be used as alternative indicators to methylene blue dye reduction methods to ensure rapid, cost effective and precise microbiological quality assessment of detecting deteriorated raw milk in household level.

**Keywords:** *Indicators, Plant extracts, Colour Variation, Decolorization*