Development of Rapid Dye Reduction (Resazurin) Test for Determination of Microbiological Quality of Coconut (*Cocos nucifera*) Water

R.D.A. Rangala[1], T. Ranpatabendi[2], G.A.A.R. Perera[1] and P.D.P.M. De Silva[1]

[1]*Department of Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka*
[2]*Tropikal Life International (Pvt) Ltd, Seeduwa, Sri Lanka*

Traditional microbiological testing methods are labor-intensive and time-consuming. Rapid microbiological tests are very important in manufacturing establishments where quick decisions are required to be taken. Resazurin test is widely used as a rapid and easy method of determining the microbiological quality of milk. The aim of this study was to investigate the applicability of resazurin dye reduction test as a rapid test method to determine the microbiological quality of coconut (*Cocos nucifera*) water in a coconut water bottling plants. Fifty-five coconut water samples obtained from desiccated coconut mills were subjected to dye reduction test along with the total colony count by standard pour plate method. Samples represented microbial counts ranged from 5.8×10^5 to 2.65×10^7 CFU/mL and reduction times range from 3 min to 115 min. A correlation was established between resazurin dye reduction times (min) and the colony forming units per milliliter of coconut water samples. A strong correlation (-0.989) between variables was detected. Regression equation established between dye reduction time and total colony count was applied to predict the microbial quality of coconut water samples. A specific colour chart was developed by using standard colour codes to identify the initial colour and the end colour of the resazurin reduction test. Thus, it can be concluded that the resazurin rapid dye reduction test can be used to identify microbial quality of coconut water within shorter period of time.

Keywords: Coconut water, Colour chart, Microbial count, Resazurin test