

Effect of different Heat Treatments and Additives on Sustaining Ethanol Content of Palmyrah (*Borassus flabellifer*) Toddy

S. Mary¹, M. Senthilnathanan^{2*}, A.M. Nilushiny¹ and S. Srivijeindran¹

Palmyrah (*Borassus flabellifer*) toddy is a naturally fermented inflorescence sap of palm that contains 5–6% of ethanol and is utilized as an alcoholic beverage and for ethanol production. During January to August annually, toddy is collected by tappers and supplied to vendors; the excess toddy is delivered to distilleries. Even though quality products could be produced from the excess Palmyrah toddy, bulk is thrown away in the local taverns due to lack of suitable techniques available to sustain ethanol content of toddy at an acceptable level until it is processed. Hence, the present study focused on developing a suitable method to maintain ethanol content of Palmyrah toddy at an acceptable level for prolonged period therefore it could be processed into quality products. Different treatment methods, using potential chemical additives such as lime, benzoic acid and sorbic acid and temperatures of 50^oC and 60^oC independently and combined, were applied to the toddy and the time taken to reach around 4% (w/v) ethanol content was measured at each instance. The application of the above additives to Palmyrah toddy revealed that benzoic acid and sorbic acid are effective in sustaining ethanol content of toddy. The heat treatment of palm toddy demonstrated that heating at 60^oC for 30 min retains ethanol content above 4% (w/v) upto 4.5 days and application of benzoic acid at 60^oC and sorbic acid either at 50^oC or 60^oC prevents further fermentation up to 6.5 days from the time of collection of toddy. Due to the concerns over the employed additives with respect to their cost and impact on the quality of processed products, heat treatment is recommended to retain ethanol content of Palmyrah toddy at an acceptable level for a prolonged period.

Keywords: Additives, ethanol, fermentation, palmyrah, toddy

¹ Palmyrah Research Institute, Kaithady, Jaffna, Sri Lanka.

² Department of Chemistry, University of Jaffna, Sri Lanka.
meena.senthilnathanan@gmail.com