

ABSTRACT

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UTILIZATION OF RAMBUTAN (*NEPHELIUM LAPPACEUM* L.) PEEL AND ITS EXTRACT TO INHIBIT ALCOHOLIC FERMENTATION OF SUGAR PALM (*ARENCA PINNATA* MERR.) SAP FOR SUGAR PRODUCTION

(xiv + 64 pages: 13 figures, 13 tables, 4 appendices)

*Rambutan (*Nephelium lappaceum* L.) peels had been studied for its inhibitory effects toward alcoholic fermentation in apple cider and cassava tapai. The aim of this research was to utilize rambutan peel and its extract to inhibit the fermentation occurring in palm sap. Preliminary research was conducted to investigate the suitable concentration of rambutan peels to give effective inhibition of fermentation. Based on the result, dried rambutan peels were ineffective, whereas size-reduced peels were able to inhibit fermentation and further investigated by other fellow researchers. In the main research stage I semi-dried peels (moisture content~40%) with concentrations 45, 50 and 55% were applied to palm sap. In addition, extracts of rambutan peel derived of the maceration of peels using ethyl acetic extract were also used with concentrations of 2, 4 and 6%. Samples were analyzed for pH, total titratable acidity, total reducing sugar, alcohol content, total dissolved solids, and microbial counting. The result showed that several peel treatments to the palm sap exhibited inhibitory effects to alcohol formation, i.e. semi-dried 45% in Day 1, 50% in Day 5, 50% in Day 7, as well as extract 4% in Day 5, 6% in Day 5, and 2% in Day 7, with levels of alcohol ranging from 0.00 ± 0.00 to 4.26 ± 0.05 as compared to control (5.14 ± 0.20 to $5.82\pm 0.43\%$). This selection was based on the total dissolved solids of samples on the selected day, with levels of total dissolved solids from 7.60 ± 0.07 to 15.32 ± 0.07 . These selected samples were cooked into moulded brown sugar and analyzed for percent moisture content, yield, visual appearance, total reducing sugar, and textural properties. The result showed that brown sugar made of rambutan peel extract were better in average among the peel-treated brown sugar, but inferior to untreated brown sugar (control) in terms of texture and moisture content. In conclusion, rambutan peel in its ethyl acetic extract form may be adopted by farmers to be used for controlling the fermentation occurring in palm sap.*

Keywords: Alcoholic fermentation, brown sugar, sugar palm sap, fermentation inhibitor, rambutan peel

References: 54 (1969–2014)