ABSTRACT

Vallen Wijaya (03420110090)

APPLICATION OF SEMI-DRIED RAMBUTAN (NEPHELIUM LAPPACEUM L.) AND ETHANOLIC EXTRACT PEEL TO COCONUT (COCOS NUCIFERA L.) SAP TO INHIBIT ALCOHOLIC FERMENTATION FOR COCONUT SUGAR PRODUCTION

The rambutan (Nephelium lappaceum L.) peel extract has been reported to contain fermentation inhibitor components that inhibited alcoholic fermentation in cider, cassava tapai and sugar palm sap. This research was aimed to investigate the rambutan peel and its ethanolic extract as a potential fermentation inhibitor to inhibit alcoholic fermentation in coconut sap for sugar production. The rambutan peel used in this research was in form of semi-dried peel and ethanolic peel extract. Both semi-dried peel with concentrations of 45, 50 and 55% and ethanolic extract with concentrations of 2, 4, 6 and 8% were applied to coconut sap and observed for seven days. Physicochemical properties (pH, total dissolved solid, total reducing sugar, total sugar, total titratable acidity and alcohol content,) and microbiological enumeration were observed. The result in research stage I showed that several peel treatments to the coconut sap exhibited inhibitory effects to alcohol formation i.e. semi-dried 45% in Day 1, 50% in Day 1 and 55% in Day 1 with levels of alcohol ranging from 0.00±0.00 to 0.53±0.00% as compared to control 4.25±0.45% Ethanolic extract rambutan peel was also able to significantly delay the alcohol production in coconut sap. After seven days, the alcohol content of saps added with 2% and 4% of rambutan peel ethanolic extract were 2.5874±0.35% and 0.1401±0.07%, respectively, as compared to the control with 3.0951±0.19% of alcohol. Moreover, ethanolic rambutan peel extract with concentration of 6% and 8% were able to completely delay fermentation and resulted in coconut sap with no alcohol content after seven days. Research stage II was to make coconut sap sugar from six selected treatments which were 45% semi-dried peels and 8% ethanolic extract from 1-day storage, 8% ethanolic extract from 2-days storage, 45% semi-dried from 3-days storage, 55% semi-dried peels and 6% ethanolic extract from 4-days storage. The results showed that coconut sugar sap added with ethanolic rambutan peel extract were better compared to peel-treated coconut sap in sugar production. Moreover, in terms of visual characteristics both peel-treated coconut sap and control have similar appearance which were sticky and hygroscopic. The inhibition of fermentation in coconut sap may benefit farmers as they can process the sap after several days and use the coconut sap as one of the ingredients in sugar production.

Keywords: Alcoholic fermentation, coconut sap, fermentation inhibitor, rambutan peel, coconut sap sugar

References: 58 (1962-2015)