

Preparation of Palmyrah Crude Sugar using Electric Oil Jacket Cooker

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ABSTRACT

Palmyrah palm (*Borassus flabellifer*) consists plenty of sugar in its sap which can be utilized to produce the sugar with good medicinal and nutritional properties. The study was carried out to find the possibility of palm crude sugar preparation using stainless steel manual tilt electric oil jacket cooker, which is having potential of multipurpose. This electric oil jacket cooker produces sugar from sap by agitation (23 rpm) and heating (9KW/380V). The study was started with preparation of Palmyrah crude sugar with 2 levels of brix (80° and 95°). Palmyrah crude sugar with 80° brix was selected through sensory evaluation using a 9 point hedonic scale test. Physico-chemical properties, proximate composition, minerals contents and antioxidant activity of the prepared Palmyrah crude sugar were determined compared with control (commercial cane sugar). Physico-chemical properties such as titratable acidity (0.24±0.01%), vitamin C (144.69±0.27 mg) and reducing sugar (0.94±0.01 mg) were significantly ($p<0.05$) higher in Palmyrah crude sugar while, water activity (0.59±0.003), filterability (15.03 ± 0.06 mL) and non-reducing sugar (94.87±0.66 g) were significantly ($p<0.05$) higher in cane sugar. Similarly, moisture (1.78±0.05 g), protein (2.59±0.08 g), ash (2.74±0.57 g), phosphorous (144.88±0.64 mg), calcium (202.24±0.09 g), magnesium (25.32±0.66 g), sodium (144.88±0.64 g) and potassium (453.02±0.47 g) were significantly ($p<0.05$) higher in Palmyrah crude sugar compared to cane sugar. Palmyrah crude sugar showed significantly ($p<0.05$) higher level of antioxidant activity (0.40 ± 0.02 g of total phenolic content) compared to cane sugar. Cost of unit production of Palmyrah crude sugar (Rs.1214 per kg) is lower compared to the cost of Palmyrah crystallized sugar. This cost could be further reduced during large scale production. Utilization of Palmyrah crude sugar instead of granulated cane sugar will improve the nutritional status of the population, reduce the expenditure of sugar importation and improve the livelihood of the people who engaged in Palmyrah crude sugar production.

Keywords: Cane sugar, electric oil jacket cooker, palmyrah crude sugar, proximate analysis