Optimization of Process Parameters for Palmyrah Jaggery Production

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ABSTRACT

Palmyra palm (*Borassus flabellifer* L.) is one of the most important and an alternate source for production of jaggery. Palmyra palm jaggery is used in the preparation of ayurvedic/traditional medicines, which will reduce the chances of lung cancer, diabetes and obesity. Processing parameters like lime quantity used to prevent fermentation of neera, and its heating temperature and time were not specific leading to low quality product. In the present study, a central composite rotatable design was used to optimize the process parameters like lime, heating temperature and heating time, developed mathematical models and response surfaces for estimation of total sugars, ash and moisture content of palmyra palm jaggery. The best combination obtained to get the good quality solid palmyrah jaggery was at lime 2.1%, temperature 121°C and time 174 min. Total sugars were increased with increase in temperature and time, but lime has less effect. Ash content was more affected with lime, but less with the time and temperature. Moisture content was more affected by temperature and less with time and lime content. The jaggery solid has proximate composition of 8.5% moisture content, 0.17% fat, 0.98% protein, 4.5% ash and 90.6% carbohydrates. Sensory evaluation of jaggery revealed that the jaggary produced at 2.1% lime, 111°C temperature and 126 min time, has superior quality.

Key words : Central composite rotatable design , Palmyra palm jaggery.