

Keerati Puphuang 2012: Production Process Development of Sugarcane Juice Concentrate and Ready-to-drink Sugarcane Juice. Master of Science (Food Engineering), Major Field: Food Engineering, Department of Food Science and Technology. Thesis Advisor: Mr. Weerachet Jittanit, Ph.D. 98 pages.

The sugarcane juice is a very popular beverage in many countries because of its good taste and medical qualities used as the treatment of jaundice, urinary tract infections, as well as for bronchitis, heart conditions etc. However, the export of sugarcane juice is limited due to the short storage life of sugarcane juice. This research aimed to study and develop the process for extending the shelf life of sugarcane juice by applying 2 methods consisting of the production of sugarcane juice concentrate and ready-to-drink sugarcane juice. In the study of the sugarcane juice concentration, the method to concentrate the sugarcane juice was vacuum evaporation using the vacuum pressure at 70 cmHg. and the hot water temperature of 70°C. Then the pasteurization of the concentrated sugarcane juice was carried out to reduce the microorganism. In this work the sugarcane juices were concentrated to various levels comprising 69, 72, 73, and 74.4 °Brix in order to study and analyze the quality of concentrated sugarcane juice kept at freezing and room temperature. The results indicate that the physical quality of sugarcane juice slightly changed after storing for a period of 12 months. After the 69 and 73 °Brix sugarcane juices were stored at freezing temperature for six months, it appeared that there was insignificant sensorial quality difference of between the reconstituted and the fresh sugarcane juice. Concerning the production processes of the ready-to-drink sugarcane juice, the results showed that the ready-to-drink sugarcane juice which was heated in order to kill microorganism would obviously have increasing amount of sediment. So, this sedimentation problem had to be solved. The speculated solutions for this problem were preheating and filtering, adding enzyme, centrifugation, in-line filter installation during UHT, adding hydrocolloid, homogenization, adding Bentronite and pH adjustment. It appeared that these proposed methods could not eliminate all of the sediment in sugarcane juice, but the pH adjustment of the sugarcane juice to pH 4.5 to accelerate the sedimentation of sugarcane juice and then filtering and adding hydrocolloid such as carboxy methyl cellulose (CMC) can reduce the amount of sugarcane juice sediment after thermal processing better than other methods. Concerning the suitable method to kill microorganism in sugarcane juice, it was found that if the higher temperature was used, the more sedimentation would occur. So, the pasteurization method was replaced the UHT. The pH adjustment of sugarcane juice to lower than 4.5 (pH~4.2), then separating the sediment and adding the hydrocolloid prior to pasteurization at the 95°C for 1 minute would extend the shelf life of the sugarcane juice at room temperature for 6 months.

---

Student's signature

---

Thesis Advisor's signature