

Supamas Panpanya 2008: Design of Hydrostatic Pressure Chamber and Study of the Optimum Conditions for Processed Guava. Master of Engineering (Agricultural Engineering), Major Field: Agricultural Engineering, Department of Agricultural Engineering. Thesis Advisor: Assistant Professor Siwalak Pathaveerat, Ph.D. 171 pages.

The study aimed to determine the optimum pressure and process time suitable for fermented guava, flavor fermented guava, and sweetness fermented guava under hydrostatic pressure by using high pressure and non pressure. The 200-liter of chamber with inside dimensions of 60 cm diameter and 90 cm height was used for inventing the fermented machine. In this fermentation, the salt stock at 10% salt by weight consisting of 140 grams of salt, 1.26 kilograms of water, 2.8 grams of calciumchloride, 4.2 grams of citric acid, and 0.5 grams of sodiummetabisulfite was used for the fermentation of 1-kg guava. For 1-kg flavor guava the salt stock consisting of 33.34-g salt, 840-g sugar, 900-g water, 3-g citric acid, and 0.5-g sodiummetabisulfite was used. In case of sweetness fermented guava, they were persevered in 50-brix, 60-brix, 70-brix of syrups which were compounded from 500-g sugar and 500-g water, 600-g sugar and 400-g water, 700-g sugar and 300-g water, respectively.

The study was conducted at the varying times of 10, 10, and 12 hours under the pressure levels of 300, 400, and 500 kPa. It was found that the optimum condition of these fermentation techniques was at 500 kPa pressure. Sine, the residual content of salt and citric acid in guava with these techniques were close to the conventional techniques. The acid content decreased when the sweetness of fermented guava increased. At condition of 70-brix syrup, the sugar content in fermented guava increased continuously while the acid content increased also and then it decreased after the optimum point in osmosis process was arrived. Moreover, the process times suitable for fermented guava, flavor fermented guava, and sweetness fermented guava were 4, 3 and 6 hr, respectively. It indicated distinctively that the time spent for manufacturing these products of guava was reduced.

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