

## **Effect of sugar-pectin-citric acid pre-commercialization formulation on the physicochemical, sensory, and shelf-life properties of Musa cavendish banana jam**

### **ABSTRACT**

Cavendish banana is the second most cultivated species in Malaysia due to its high potassium and vitamin B6 content. However, there has been little commercialisation of Cavendish banana in jam making to date because of its unappealing physical characteristics and unsavoury taste. In the present study, response surface methodology was used to determine the optimum quantity of sugar (175-275 g)-pectin (3-7 g)-citric acid (150-234 mL) (SPC) on water activity, °Brix, colour analysis, pH, total titratable acidity (TTA), and sensory attributes of formulated banana jams. The amount of sugarpectin-citric acid was found to have an effect on the TTA and pH of the banana jams. Conversely, water activity and °Brix were only affected by the amount of sugar. The lightness, L\* of the banana jams was influenced by the quantity of pectin and the volume of citric acid added. Sensory analysis using 30 panellists showed that there were changes in the colour, taste, aroma, texture, and overall acceptability of banana jam depending on the amount of sugar used. In a shelf life study, banana jams stored at 4 °C were found to have a longer shelf life compared to those stored at 25 °C. Overall, the optimal formulation for a high-quality banana jam was 281.79 g of sugar, 4.13 g of pectin, and 264.66 mL of citric acid. This study constitutes the first report on the potential pre-commercialisation formulation for Cavendish banana jam production.

**Keyword:** Cavendish banana; Jam; Pectin; Response surface methodology; Sensory evaluation; Shelf life