

## Study on Preparation and Storage of Jam Incorporating Carrots (*Dacus Carrota*), Banana (*Musa Acuminata*) and Lime (*Citrus Aurantifolia*)

**Authors :** K. Premakumar, D. S. Rushani, H. N. Hettiarachchi

**Abstract :** The production and consumption of preserved foods have gained much importance due to globalization, and they provide a health benefit apart from the basic nutritional functions. Therefore, a study was conducted to develop a jam incorporating carrot, banana, and lime. Considering the findings of several preliminary studies, five formulations of the jam were prepared by blending different percentages of carrot and banana including control (where the only carrot was added). The freshly prepared formulations were subjected to physicochemical and sensory analysis. Physico-Chemical parameters such as pH, TSS, titrable acidity, ascorbic acid content, total sugar and non-reducing sugar and organoleptic qualities such as colour, aroma, taste, spread ability and overall acceptability and microbial analysis (total plate count) were analyzed after formulations. Physico-Chemical Analysis of the freshly prepared Carrot -Banana Blend jam showed increasing trend in titrable acidity (from 0.8 to 0.96, as % of citric acid), TSS (from 70.05 to 67.5 0Brix), ascorbic acid content (from 0.83 to 11.465 mg/100ml), reducing sugar (from 15.64 to 20.553%) with increase in carrot pulp from 50 to 100%. pH, total sugar, and non-reducing sugar were also reduced when carrot concentration is increased. Five points hedonic scale was used to evaluate the organoleptic characters. According to Duncan's Multiple Range Test, the mean scores for all the assessed sensory characters varied significantly ( $p < 0.05$ ) in the freshly made carrot-banana blend jam formulations. Based on the physicochemical and sensory analysis, the most preferred carrot: banana combinations of 50:50, 100:0 and 80:20 (T1, T2, and T5) were selected for storage studies. The formulations were stored at 300 °C room temperature and 70-75% of RH for 12 weeks. The physicochemical characteristics were measured at two weeks interval during storage. The decreasing trends in pH and ascorbic acid and an increasing trend in TSS, titrable acidity, total sugar, reducing sugar and non-reducing sugar were noted with advancement of storage periods of 12 weeks. The results of the chemical analysis showed that there were significance differences ( $p < 0.05$ ) between the tested formulations. Sensory evaluation was done for carrot -banana blends jam after a period of 12 weeks through a panel of 16 semi-trained panelists. The sensory analysis showed that there were significant differences ( $p < 0.05$ ) for organoleptic characters between carrot-banana blend jam formulations. The highest overall acceptability was observed in formulation with 80% carrot and 20% banana pulp. Microbiological Analysis was carried out on the day of preparation, 1 month, 2 months and 3 months after preparation. No bacterial growth was observed in the freshly made carrot -banana blend jam. There were no counts of yeast and moulds and coliforms in all treatments after the heat treatments and during the storage period. Only the bacterial counts (Total Plate Counts) were observed after three months of storage below the critical level, and all formulations were microbiologically safe for consumption. Based on the results of physio-chemical characteristics, sensory attributes, and microbial test, the carrot -banana blend jam with 80% carrot and 20% banana (T2) was selected as best formulation and could be stored up to 12 weeks without any significant changes in the quality characteristics.

**Keywords :** formulations, physicochemical parameters, microbiological analysis, sensory evaluation

**Conference Title :** ICFSN 2017 : International Conference on Food Security and Nutrition

**Conference Location :** Kuala Lumpur, Malaysia

**Conference Dates :** February 12-13, 2017