STUDY ON QUALITY EVALUATION OF JAM PREPARED FROM UNDERUTILIZED STAR FRUIT

(*Avverhoa carambola*)

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ABSTRACT

Star fruit (*Averrhoa carambola*) is a sub- tropical underutilized fruit having anti-inflammatory effect, analgesic, and hypoglycemia. The jam is a complete natural product with no added preservatives. Pineapple jam is a popular value added fruit product in Sri Lanka. Combination of this underutilized star fruit with highly demanded fruit like pine apple can be a solution for having new jam product in local market with different consumer preference. Therefore, this research study was undertaken with the objective of finding out the suitability of star fruit for jam preparation with or without pineapple.

Preliminary studies were conducted with the following combination of ingredients as treatments of jam samples - **T1**: star fruit + without pectin + sugar, **T2**: star fruit + with pectin + sugar, **T3** : star fruit + with gelatin + sugar substitute (Aspartame), **T4** : star fruit + pine apple + with pectin + sugar, **T5** : star fruit + pine apple + gelatin + sugar substitute in respectively. The freshly prepared jams were subjected to determine the physico- chemical parameters such as pH, TSS, total sugar, reducing sugar, non – reducing sugar, titrable acidity, ascorbic acid, dry matter%, moisture%, ash% and also organoleptic properties such as colour, texture, aroma, taste, overall acceptability. In the day of preparation the microbial analysis were done for freshly prepared five treatments.

Physico- chemical analysis of star fruit blended with pine apple jam showed the increasing the trend in titrable acidity (from 0.5925 to 0.75037, as % of citric acid), TSS (from 2.93 to 7.53 Brix°), reducing sugar (from 1162 to 2517.33mg/100 ml), total sugar

(from 2370.33 to 7720mg/100ml), dry matter% (from 14.16 to 31.43) and also showed the decreasing of non- reducing sugar (from 5898.33 to 1259.33 mg/100ml), ascorbic acid (from 484 to 59.40 mg/100ml, pH (from 5.67 to 4.72) , moisture% (from 85.2% to 67.63%), ash% (from 0.57% to 0.27%) due to star fruit combination of different ingredients. Seven point Hedonic Scale was applied for evaluation of organoleptic properties. According to the Tukey's Studentized test, all sensory characters were significantly ($p<0.05$) differed in all treatments. No microbial growth (bacteria, yeast, moulds) in freshly made jams at the day of preparation.

Based on the physico – chemical , organoleptic and microbial analysis; T1 (star fruit+ sugar), T2 (star fruit+ pectin+ sugar), T4 (star fruit+ pine apple+ pectin+ sugar) were selected for storage studies at 30°C and 70-75% RH for 12 weeks. Physico- chemical analysis were during the 12 weeks storage periods. pH, ascorbic, non- reducing sugar, moisture, ash content showed the decreasing trend during storage period. The TSS, total sugar, reducing sugar, titrable acidity, dry matter content were increased according to the DMRT and those were significantly ($p<0.05$) differed in each treatments. Organoleptic evaluation was done for star fruit blended with pine apple jam after 12 weeks periods with semi- trained and trained panelists. The sensory analysis showed the there were significant differences ($p<0.05$) in all sensory parameters in each treatment. The highest overall acceptability was observed in the sample T4 (star fruit+ pine apple+ pectin+ sugar). There were no growth of yeast and molds duration after one month period. After three month of storage periods there were only bacterial count below the critical level and all the stored treatments are safe for human consumption. The jam (T4) with star fruit blended with pine apple, sugar and pectin was the best

combination jam according to physico-chemical, organoleptic and microbial quality compared to other combinations at the end of 12 weeks storage period.

Based on the results of physico chemical , organoleptic and microbial analysis of freshly made and stored jams , **T4** – Jam prepared with underutilized star fruit incorporating pine apple pulp , pectin, sugar was selected as best jam combination which could be kept at ambient temperature for 12 weeks without any significant changes in quality .It can be concluded that the incorporation of pine apple pulp with star fruit pulp can improve the nutritional quality of jam and add variety in the diet.

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