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Preparation, standardization and sensory evaluation of spicy avocado fruit spread

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Abstract
Avocado is an energetic fruit with high nutritional value and is considered a major tropical fruit scientifically known as *Persea Americana* Mill. Which belongs to the family Lauraceae. The keeping qualities of avocado fruits are limited due to its high rate of postharvest respiration. Different pre-treatments were applied to the fruits to deactivate the action of enzymes present in fruit. Based on the organoleptic evaluation, T_6 was selected as the best pre-treatment for the development of spicy avocado fruit spread. Standardization of Spicy Avocado Fruit Spraed was done adding different proportions of salt, pepper powder, tomato powder, mint powder, KMS, citric acid as treatments with best proportion was selected for further standardization studies. Organoleptic properties of the product were assessed by sensory evaluation and fruit spread was found to be acceptable.

Keywords: pre-treatments, kms, citric acid, salt

1. Introduction
Avocado is an energetic fruit with high nutritional value and is considered a major tropical fruit, since it is rich in protein and contains fat soluble vitamins lacking in other fruits, including Vitamins A and B, and median levels of vitamins D and E. It contains different oil levels in the pulp, thus it is widely used in pharmaceutical and cosmetic industries, and for obtaining commercial oils similar to olive oil, because of their similar fatty acid composition [2].
Avocado growth and development is intense, differing from other fruit species. After harvest, the fruit completes maturation, with major changes in metabolism and higher respiratory rate, and thus high production of ethylene, being highly perishable under environmental conditions leading to the production of high amounts of waste. In this sense, the avocado pulp processing can contribute to its best use, either as a food product or for oil extraction [4]. Avocados are grown in many countries of the world and are consumed principally as fresh fruits. Avocado require special handling because of their highly perishable nature. Therefore, the development of new avocado products and of improved methods of preservation are of interest to avocado growers. These Avocado products include the paste, puree and guacamole and among these-guacamole is a fruit pulp seasoned with salt, onion, lemon, pepper, tomato and this is the most marketed product of Avocado by U S companies [3].

2. Materials and Methods
2.1Selection of Avocado Fruits
Avocado cultivar commonly found in the households of Wayanad named Purple Hybrid was selected for the study. Mature fruits were collected from Regional Agricultural Station, Ambalavayal, Wayanad District for the present investigation.

2.2 Effect of different pretreatments on the quality of avocado fruits
The avocado fruits when ripe have short life span and would discolour and rot whether refrigerated or not, and lose its flavor [1].
Hence different pre-treatments were applied to the fruits to deactivate the action of enzymes present in fruit. Pre-treatments processing methods such as blanching, immersing in of sugar syrup, honey, brine solution, citric acid, KMS were tried out separately to select the best pre-treatment method for the development of Spicy avocado fruit spread.

2.3 Development and Standardization of Spicy Avocado Spread
Spicy fruit spread developed included a mixture of pre-treated avocado pulp, salt, pepper powder, Tomato powder, Mint powder, Citric acid, KMS in different proportions.

2.4 Sensory Evaluation studies in developed fruit spreads
Sensory evaluation of developed spicy avocado fruit spreads was carried out by a panel of 10 judges using a nine point hedonic rating scale. The major quality attributes included for scoring were appearance, colour, flavour, taste and texture.

3. Results and Discussion
The avocado fruit were collected and washed under running water and it was cut in to halves. The pulp was taken out by pitting and scooping and blended well using a blender. Table 1 showed the mean sensory score of pre-treated avocado pulp. The citric acid + KMS + salt (T_6) in the combination of 0.25(g):0.1(g):10(g) was selected pre-

treatments organoleptically for the development of spicy avocado fruit spread. The Ingredients namely Salt, Pepper powder, Tomato powder, Mint powder, KMS, Citric acid were added and thoroughly mixed in to the puree. Tomato and Mint powder were powdered after drying in oven for 7-8 hours at 65^0C. Table 2 shows the mean sensory score of Spicy Avocado Fruit Spread. The scores were analyzed in terms of appearance, colour, flavor, texture, taste. Based on the organoleptic evaluation the treatment T_5 with Pulp (100g): Pepper Powder (3g): Salt(2g): Tomato Powder(5g) : Mint Powder (1.5g) :Citric acid(0.1g):KMS(0.25g) was selected as the superior blend for the development of spicy avocado spread. The scores assigned by the sensory panel members were analysed using Kruskal wallis test is described in Table 1 & 2.

Table 1: Sensory Evaluation Scores of Pre-treated Avocado Pulp

Treatments	Mean rank values					
	Appearance	Colour	Texture	Flavour	Taste	Overall acceptability
(T1) Blanching	47.75	54.90	38.05	34.45	31.00	38.45
(T2) Sugar	47.75	53.20	29.05	32.50	33.15	35.65
(T3) Salt	34.30	24.80	43.85	61.90	74.30	46.86
(T4) Honey	32.25	25.95	44.00	55.90	56.70	39.25
(T5) KMS: citric acid: Sugar	74.90	71.50	79.00	78.90	76.80	85.00
(T6) KMS: citric acid: Salt	69.40	58.10	71.15	74.35	68.95	75.75
(T7) Citric acid	44.55	58.10	40.65	32.50	33.40	45.35
(T8) KMS	47.50	51.40	37.75	25.50	24.05	36.20
(T9) Control	11.10	6.55	26.00	13.50	11.15	11.40
K value	46.66	59.39	41.94	65.66	72.22	61.04
X^2 (0.05)	15.51					

Table 2: Sensory Evaluation Scores of Spicy Avocado Fruit Spread

Treatments	Appearance	Taste	Colour	Flavour	Odour	Overall Acceptability
	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Mean Rank	Mean Rank
T1	17.70	15.80	20.05	18.50	19.00	15.50
T2	15.20	18.80	16.50	16.45	12.60	14.00
T3	21.60	17.30	22.15	19.65	24.50	23.20
T4	28.80	32.70	25.30	27.90	26.95	29.30
T5	44.20	42.90	43.50	45.00	44.45	45.50
K value	27.23	28.71	23.29	27.74	29.85	33.77
X^2(0.05)	9.49					

4. Conclusion

Heat processing of avocado fruit will develop offflavour and bitter taste in value added products against the nutty flavor of fresh fruits. The results obtained from the study showed that being a superfruit with poor shelflife qualities, the developed spicy avocado fruit spread which secured high sensory score can be marketed successfully for reducing wastage and economic prosperity.

5. References

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