



## Assessment of sensory qualities of fresh fruits of avocado cultivars grown in Kerala

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### Abstract

Avocado or Butter fruit is a tropical ever green climacteric fruit scientifically known as *Persea americana*, which belongs to the family *Lauraceae*. Avocado fruits stand out as the most nutritive among fruits and are regarded as the most important therapeutic fruit in human diet. This study analysed the sensory characteristics of selected cultivars of avocado using a 9-point hedonic rating scale. We assessed the six sensory attributes such as appearance, colour, flavour, taste, and texture of the fruits. The highest mean rank (23.3) for appearance was obtained for the cultivar purple hybrid and lowest for Kallar round (16.10). For colour the cultivar purple hybrid was noted to get highest mean rank value (22.25), while the cultivar Fuerte recorded the lowest mean rank score (17.90). For flavour the highest mean rank value was recorded for the cultivar purple hybrid and the least for the cultivar Fuerte. The texture of the four avocado cultivars were analysed and it revealed highest for the cultivar Kallar round (24.20) and least for Fuerte (17.75). The highest mean rank value was obtained for the cultivar Kallar round (21.90) and the least mean rank value by Pollock (17.80).

**Keywords:** avocado cultivars, sensory qualities, sensory quality, appearance, texture

### Introduction

Fruits are nature's marvellous gift to the humankind; indeed, they are life enhancing medicines packed with vitamins, minerals, antioxidants, and many phytonutrients. They are an absolute feast to our sight, not just because of their colour and flavour but of their unique nutrient profile that helps the human body be fit, rejuvenate and free of diseases (California Avocado Commission, 2011). *Persea americana* or Avocado is tropical fruit belongs to the family *Lauraceae*. It is commonly known butter fruit or alligator pear (Golukcu & Ozdemir, 2010) [5]. Avocado is mainly consumed as fresh pulp, in sandwich filling or in salads. It can also be used in ice creams and milk shakes and the pulp can be preserved by freezing (Dinubile, 2010) [3]. It has been cultivating in homesteads because of its nutritional quality and its use as a medicine. There is the necessity to recognise the sensory profile of different avocado cultivars and it will be beneficial for the popularity of different cultivars grown in Kerala. Because there are not many studies in Avocado cultivars grown in Kerala and their sensory profile. In Kerala avocados are found grown in homesteads of Wayanad and Idukki Districts.

Sensory analysis is a set of norms for evaluating the characteristics of a product, based on human senses, and the evaluation methods are differentiated, aiming to acquire more adequate responses to the researched profile of the product (Canate *et al.*, 2015). Pizani and co-workers in (2014) reported that sensory preferences have a major impact on food choice and food intake. Our senses determine which foods are good (like) and which are bad to ingest (dislike) (Gyles *et al.*, 2010) [6]. This property of the food decides the amount of food to be consumed. This study evaluated the sensory profile of avocado cultivars named Pollock, Kallar Round, Purple hybrid, Fuerte, which were grown in Wayanad district of Kerala.

### Materials and Methods

Acceptability trials on the four cultivars of avocado fruits were carried out in the Food Science laboratory, College of Agriculture, Vellayani, Thiruvananthapuram by a panel of ten judges. Cultivars selected for the study are Kallar round, purple hybrid, Pollock Fuerte which were collected from Regional Agricultural Research Station, Kerala Agricultural University, Ambalavayal. Fresh fruits were collected and scooped and separated in different containers and labelled for the experiment. Sensory parameters like appearance, flavour, colour, taste, and texture of fresh avocado fruits were studied by selected panel members using hedonic rating scales. A nine-point rating scale was applied for each parameter (Lawless & Heyman, 2013) [7]. The major quality attributes include acceptance, colour, texture, and taste. Judges were requested to taste the four samples and mark their respective scores. Score card on these lines were prepared and distributed among the judges. The overall acceptability was also computed based on the scores for quality attributes.

### Statistical Analysis

For sensory evaluation the different preferences given by the 10 judges in the sensory panel were analysed using the Kruskal-Wallis test to get the mean rank values for all the treatments.

### Results and Discussion

#### Assessment of sensory qualities of fresh fruit.

#### Appearance

The impression of food depends on its appearance (Fulgoni *et al.*, 2010). The mean rank values for appearance of the four cultivars of avocado ranged from 16.1 to 23.3. The highest mean rank (23.3) for appearance was obtained for the cultivar purple hybrid and lowest for Kallar round

(16.10). There was no significant difference in appearance among the four cultivars. The mean rank values for appearance of the four cultivars of avocado ranged from 16.1 to 23.3. The highest mean rank (23.3) for appearance

was obtained for the cultivar purple hybrid. There was no significant difference in appearance among the four cultivars.

**Table 1:** Sensory analysis of fresh avocado cultivars

Treatments	Appearance		Colour		Flavour		Texture		Taste		Overall acceptability	
	Mean rank	Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	Mean score	Mean rank	Mean score
Pollock	20.60	7.60	21.95	7.70	20.60	7.40	19.55	7.40	17.80	7.40	18.60	7.40
Kallar round	16.10	7.30	19.90	7.60	21.10	7.70	24.20	7.70	21.90	7.70	20.60	7.60
Purple hybrid	23.30	7.90	22.25	7.80	23.00	7.50	20.50	7.50	20.75	7.70	21.75	7.70
Fuerte	22.00	7.80	17.90	7.40	17.30	7.30	17.75	7.30	21.55	7.70	21.05	7.60
K value	2.64		1.21		1.6		1.99		1.11		0.098	
$\chi^2_{(0.05)}$	7.815											

### Colour

It is a property that is evaluated by three distinct forms by the consumer, in relation to tone, intensity and brightness. The tone is defined by the wavelength of the light reflected by the product, the intensity is determined by the concentration of colouring substances present in the product and the brightness is the amount of light reflected by the product compared to the amount of light that focuses (Pearson et al., 2000) [10]. Colour is one of the essential parameter in sensory analysis. The cultivar purple hybrid was noted to get highest mean rank value (22.25), while the cultivar Fuerte recorded the lowest mean rank score (17.90) and the analysis found non-significant at 5% level.

### Flavour

The flavour of different avocado cultivars was evaluated, and the mean rank values ranged from 17.30 to 23.00. The highest mean rank value was recorded for the cultivar purple hybrid and the least for the cultivar Fuerte. The analysis found non-significant at 5% level. Based on the study conducted by Pisani (2015) the flavour and aroma of fresh avocado were described as follows: bland, grassy, woody, piney-terpiney, sweet, fruity, nutty, buttery, savory, oily-fatty.

### Texture

The touch is responsible for the perception of the texture attribute, which is defined as a set of all the rheological and structural characteristics of a food, perceptible to the mechanical receptors, tactile and eventually by the visual and auditory receptors. The texture indicates whether a food is thick or thin, free flowing or dense. The texture of the four avocado cultivars were analysed and it revealed highest for the cultivar Kallar round (24.20) and least for Fuerte (17.75). The data revealed that the cultivars are not significantly different. The texture of fresh avocado was described in the study conducted by Obenland (2012) [9] as follows: firm, mushy, stringy, gritty, creamy, smooth, dry, watery, and oily. Magwaza and Tesfay (2015) [8] reported that texture is mainly influenced by the stage of fruit ripeness, which affects flesh firmness and higher oil content that increases flesh creaminess and smoothness.

### Taste

The mean rank value for taste of the four cultivars ranged from 17.80 to 21.90. The highest mean rank value was obtained for the cultivar Kallar round (21.90) and the least mean rank value by Pollock (17.80). No significant

difference was observed in taste among the four cultivars.

### Overall acceptability

Among the four cultivars purple hybrid obtained highest mean rank value (21.75) for overall acceptability and least by Pollock (18.60). The results indicates that there was no significant difference in mean rank scores obtained for the four different cultivars. Mean rank value highlighted, purple hybrid to be organoleptically excellent followed by Fuerte, Kallar round and Pollock.

### Conclusion

This study evaluated the sensory qualities of fresh fruit of avocado grown in Kerala. The study used different avocado cultivars such as kallar round, purple hybrid, fuerte and pollock. Evaluation of sensory qualities of fresh fruits is necessary for consumer acceptance and to increase the acceptability of the product in the market. This sensory evaluation study gave the inference that the overall acceptability, colour, appearance and texture were comparatively higher in the cultivar purple hybrid than the other cultivars. The taste and the flavour found higher in the cultivar kallar round.

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