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Short Communication

Comparative evaluation of physico-chemical properties of two varieties of pomogranate fruits-Ganesh and Arakta

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The present investigation was carried out to analyze different physico-chemical characteristics of two different varieties of pomogranate fruits viz. Ganesh and Arakta. The study reveals that the morphological characteristics of pomegranate, that is, colour of fruit of var. Ganesh and Arakta was yellowish with pink patches and dark red, respectively. The average weight was 210.90 and 254.20 g for Ganesh and Arakta cultivars. The edible index and waste index were found to be 66.55 and 33.45% for Ganesh, and 65.89 and 34.11% for Arakta cultivar. The chemical parameters of fruit determined, total soluble solid (TSS), acidity, pH, moisture, ash content, carbohydrate, protein, fat and ascorbic acid were quite similar for both varieties. The dark red colour of Arakta cultivar had eye appeal effect to the consumers. With the various nutritional benefits, the fruits could be recommended for commercial exploitation and preparation of different value added products.

Key words: Pomogranate, anardana, physical properties, processing, chemical properties.

INTRODUCTION

The pomegranate is a non-climacteric many-seeded berry. The fruits are round, oblate or obovate in shape and vary in weight and size (8 to 12 cm diameter). On an average, edible portion fruit represents about 52% of total fruit weight comprising about 78% juice and 22% seeds (Berry, 2005).

The fruit skin may be thick or thin but smooth, leathery and tough with colour varying from pale-yellow to crimson-red. Inside, the fruit is filled with numerous seeds coated with juicy pulp shining like pearls or jewels. These are called arils, which are the edible portion. The pulp in fruits of superior quality is thick, soft, fleshy and dripping juicy. The colour of the pulp varies from light pink to crimson-red. The taste of the pulp also varies from sweet and aromatic to sour and insipid. The seeds may be hard or soft but edible. The softer seeded varieties are designated seedless (Bose et al., 2002).

The fruit is a good source of sugars and vitamin C and a fair source of iron and poor in calcium. The juice contains amino acids such as glutamic acid, aspartic acid, tryptophan, methionine, etc. It is rich in phosphorus. The seeds are rich source of lipids, protein, crude fibre and ash, and also contain sugars and pectin. The seeds yield oil which is composed of several fatty acids. The rind contains polyphenols and mineral matter, which is composed of potassium, calcium, iron and copper. The water and solvent extracts of the rind contains gallo-catechin, quercetin, gallic acid, catechin, etc. which possess strong antioxidant properties.

Pomegranate though minor fruit is included under

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Table 1. Physical properties of pomegranate fruit.

Variety	Physical properties						
	Colour of fruit	Colour of arils	Weight of fruit (g)	Weight of arils (g)	Weight of peel (g)	Edible index (%)	Waste Index (%)
Ganesh	Yellowish with pink patches	Pinkish	210.90	140.35	70.55	66.55	33.45
Arakta	Dark red	reddish	254.20	167.50	86.70	65.89	34.11
S.E.	-	-	1.74	1.74	0.72	0.83	0.18
C.D.	-	-	0.80	0.83	0.84	0.28	0.74

medicinal plants. Since ancient time it has been commonly used in folk medicine in the Middle East, Iran and India as medication for antiviral, antifungal, antibacterial and antimicrobial activity. The juice from fresh pomegranate fruit is an excellent cooling beverage for alleviating thirst in cases of fever and sickness. The extract of pomegranate may be used as an antifungal agent for the treatment of candidosis associated with denture stomatitis (Vasconcelos et al., 2003). In addition, it is widely used in therapeutic formula, cosmetics, and food seasonings. Since ancient times, the pomegranate has been regarded as a “healing food” with numerous beneficial effects in several diseases (Vidal et al., 2003).

Knowing the importance of health benefits of pomegranate and all related aspects, the present investigation entitled “Comparative evaluation of physico-chemical properties of two varieties of pomogranate fruits-Ganesh and Arakta” was carried out to analyze different physico-chemical characteristics of different varieties of pomogranate fruits, that is, Ganesh and Arakta cultivars and to explore these fruits for commercial processing.

MATERIALS AND METHODS

Pomegranate fruits cultivars Ganesh and Arakta were selected from local market from Parbhaani, Maharashtra. The fruits of uniform size, colour and maturity were selected by visual observation and used as experimental material.

Morphological features

Morphological features like colour, weight of fruit, percent edible portion, percent waste, percent of juice were determined.

Proximate analysis of pomogranate fruits

Pomogranate fruits were analyzed for its total soluble solid (TSS) (°Bx), acidity, pH, moisture, ash, fat, protein, carbohydrate and ascorbic acid content by standard methods (AOAC, 1990).

Statistical analysis

The analysis of variance of the data obtained was done by using completely randomized design (CRD) for different treatments as per the methods given by Panse and Sukhatme (1967). The analysis of variance revealed at significance of $P < 0.05$ level, S.E. and C.D. at 5% level is mentioned wherever required.

RESULTS AND DISCUSSION

The data on physical characteristics of pomegranate (Table 1) shows that the colour of fruits of Ganesh cultivar was yellowish with pink patches and that of Arakta cultivar was dark red. The colour of arils in Ganesh cultivar was pinkish whereas it was blood red in Arakta cultivar. The average weight of fruit of Ganesh cultivar was 210.90 g while weight of Arakta was 254.20 g.

The edible portion and waste index in Ganesh cultivar were 66.55 and 33.45%, respectively, while in Arakta cultivar these were 65.89 and 34.11% respectively. The edible portion was found to be more in Ganesh cultivar than in Arakta cultivar. The results of present study were in good accordance with results reported by Jagtap et al. (1992).

It is observed from Table 2 that the TSS of juice from Ganesh (15°Bx) was slightly higher than that of Arakta (14°Bx). The acidity in juice of Ganesh and Arakta cultivar was 0.3 and 0.35%, respectively. The pH of juice of Ganesh and Arakta fruit was 3.2 and 3.1, respectively. The moisture content of Ganesh cultivar (80.50%) was slightly higher than that of Arakta (79.80%). The ash content of Ganesh and Arakta was 0.8 and 0.9%, respectively.

The fat content of Ganesh and Arakta was 0.2 and 0.25%, respectively. The protein content found in Ganesh was 1.6 and 1.5% in Arakta cultivar. The carbohydrates are important from nutritional point of view as it provides energy to the body. The carbohydrate content of Ganesh was 14%, but 14.5% carbohydrate was found in Arakta. The amount of ascorbic acid present in Ganesh was 9 mg/100 g and 9.5 mg/100 g in Arakta cultivar. Similar results were reported by Fadavi et al. (2006) for different cultivars of pomegranate.

Conclusion

Nevertheless, the pomegranate has commercial potential for production of health related food products, but the

Table 2. Chemical characteristics of pomegranate fruit.

Variety	Parameter								
	TSS (^{0}Bx)	Acidity (%)	pH	Moisture (%)	Ash (%)	Fat (%)	Protein (%)	Carbohydrate (%)	Ascorbic acid (mg/100 g)
Ganesh	15	0.30	3.2	80.50	0.8	0.2	1.6	14.0	9.0
Arakta	14	0.35	3.1	79.80	0.9	0.25	1.5	14.5	9.5
S.E.	0.37	0.083	0.091	0.38	0.091	0.045	0.115	0.420	0.238
C.D.	1.46	0.32	0.35	1.50	0.35	0.17	0.452	1.64	0.933

systematic and organized approach should be followed with other sophisticated methods for retention of other bio-active components, storage life, clinical studies and packaging requirements.

It was concluded that the chemical parameters of fruit determined were TSS, acidity, pH, moisture, ash content, carbohydrate, protein, fat and ascorbic acid which were quite similar for both varieties. The dark red colour of Arakta cultivar had eye appeal effect to the consumers. With the various nutritional benefits, the fruits could be recommended for commercial exploitation and preparation of different value added products.

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