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BASIC PHYSICOCHEMICAL ANALYSIS OF CAPE GOOSEBERRY (*PHYSALIS PERUVIANA* L) FRUITS OBTAINED FROM KOLKATA MARKET

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ABSTRACT

Cape gooseberry is exotically famous for its nutritional and medicinal properties all over the world. This research analysis is perpetuated on qualitative analysis based on some physiochemical parameters of *Physalis peruviana* L. or cape gooseberry procured from local market of Kolkata. To illustrate, the experiment was based on estimation of qualitative factors such as fruit diameter and circumference, reducing sugar content, total soluble solids, total titratable acidity, ascorbic acid content and total phenolic content. It was obtained from the experiment that fruit obtained from the market of Kolkata showed satisfying results with respect to various attributes taken.

Keywords: Kolkata, market, cape gooseberry, laboratory, analysis.

Introduction

Physalis peruviana L. is also known as cape goose berry or golden berry or rash-bhari which comes under solanaceous family and is native to South America. It now has become commercially recognized in many tropical and subtropical countries (Novoa *et al.*, 2006; Al-olayan *et al.*, 2014). Cape gooseberry possessed yellowish orange color fruits with 1-3.5cm diameter, resembling a unique taste of flavor of bitter sweet and showcasing a shape of bladder circumscribed by epicalyx. At the same time, there are several types of cape gooseberry available in worldwide like colorful Colombian types characterized by higher sugar content, ecotypes of Kenya and South African type having mild taste (Almanza and Espinosa 1995; Flores *et al.*, 2000).

Physalis peruviana L. irrespective of being on herbaceous exotic minor fruit have exhibited great potential in their nutritional (vitamins A, B and C) and organoleptic properties (flavor, odor and color) (Puente *et al.*, 2011). In addition, this semi-shrub plant is recurrently available in annual as well as perennial form. The fruit apart from table consumption is used for preparation of glazes for seafood and meat as well as preservatives for jellies and jams (National Research Council, 1989). Furthermore, the fruit helps in blood purification, intestinal parasites elimination, albumin reduction in the kidney and treatment of prostate problems. Nevertheless, reports have claimed of it being able to treat cancer based on its medicinal properties rather on just theories (Zavala *et al.*, 2006; Fischer and Miranda, 2012).

Consequently, availability of cape gooseberry in contemporary world is increasing after globalizations where

nation like India is not left behind. To illustrate, Kolkata market is one of the popular markets in India clinging to good stocks of cape gooseberry. So, in our present experiment fruits of the cape gooseberry were purchased from Kolkata market and evaluated for their nutritional attributes.

Materials and Methods

The fruits of cape gooseberry were procured from Hazra, fruit market of Kolkata (Pin: 700026). The research analysis thereafter was carried out in the laboratory of Department of Horticulture, Institute of Agricultural Sciences, University of Calcutta, in the academic year of 2022-2023.

A bulk amount of cape gooseberry fruits was taken and washed repetitively to discard its impurities. Thereafter, the fruits were dried under fan for carrying out further analysis. First of all, the dried fruits were weighed individually at digital balanced and average data was recorded in (gm). Also, the fruits were measured equatorially around periphery of the middle-bulged area using Vernier Caliper in (cm) as stated by (Liu *et al.*, 2010). Similarly, random fruits were selected and juice extracts of them were subjected to Hand Refractometer for ascertainment of total soluble solids(TSS) (Jha *et al.*, 2007). The other qualitative attributes documented during this experiment were reducing sugar (Ranganna, 2003), total titratable acidity (Ranganna, 2003), ascorbic acid content (Ranganna, 2003) and total phenolic content (Singleton *et al.*, 1999).

Results and Discussion

Fruit Diameter Weight and Circumference

The fruits taken for the experiment documented an average weight of 4.5 gm and diameter obtained was 1.53 cm. Also, the circumference measured was 4.81 cm. Comparatively, a previous report indicated a relevant data of physical variables such as average fruit weight with calyx between 3.54 gm and 6.47 gm (Harrera *et al.*, 2011).

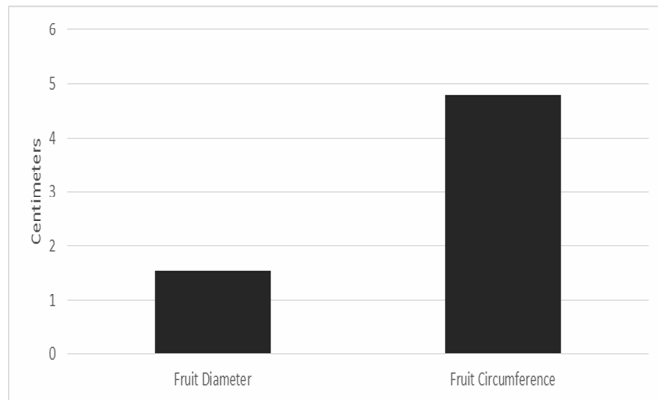


Fig. 1: Fruit diameter and circumference (cm.) of cape gooseberry obtained from Kolkata market.

Total Soluble Solids

The data analysis revealed the value in total soluble solids as 11.43⁰ brix of Cape gooseberry available from Kolkata market. Similar results were found in total soluble solids content in Cape gooseberry procured from north-eastern Colombia region with 14.7* brix (Harrera *et al.*, 2011). Also, in an earlier study fruit under greenhouses aggregated with 16.36⁰ brix in Miraflores, Boyacá, Colombia and with 15.67⁰ brix in open field cultivar (Angulo, 2005). Likewise, an average of 12.9⁰ brix of total soluble solids recorded in Cape gooseberry cultivated in open field in Rio Negro, Antioquia, Colombia (Trillos *et al.*, 2008).

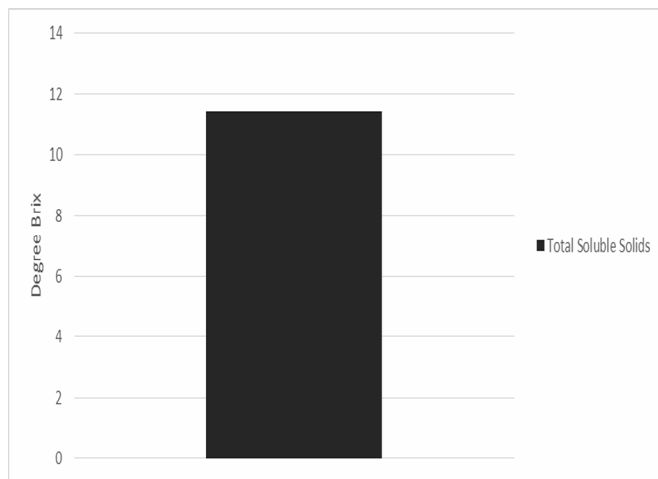


Fig. 2: Total Soluble Solids (⁰ Brix) of cape gooseberry obtained from Kolkata market.

Reducing Sugar

In this research analysis, it has been observed that Cape gooseberry is rich in nutritional compositions. The reducing sugar of Cape gooseberry was 6.5% procured from Kolkata market. Similarly, relevant data of reducing sugar was observed at 4.20% on fresh weight basis by Aamer, 2018.

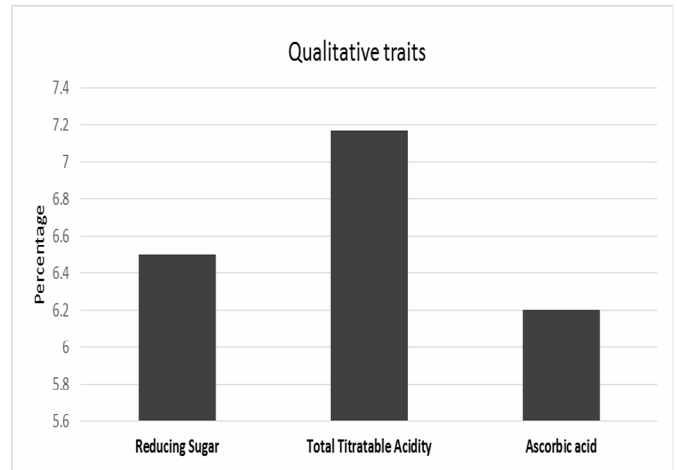


Fig. 3: Some qualitative traits of cape gooseberry obtained from Kolkata market.

Total Titratable Acidity

Moreover, total titratable acidity of Cape gooseberry of Kolkata origin was pivotally found with 7.17%. However, earlier reports unlikely revealed acidity in range between 1.6 and 2.0% (Herrera 2000; Rodríguez *et al.*, 2006).

Ascorbic Acid

A noteworthy data was recorded with 6.2% of ascorbic acid in the fruits from Kolkata. However, in contrast an average value of ascorbic acid of (32.32±6.23 mg/100 g) was found in as reference of data of Rehm and Espig 1991 and Novoa *et al.*, 2006.

Total Phenolic Content

This research analysis had revealed the values in total phenolic content with 9.92 mg GAE/g in cape gooseberry procured from market in Kolkata. In comparison, results obtained from cultivation of cape gooseberry at CORPOICA the Colombian Corporation of Agricultural Research in Rionegro, Colombia reported with 0.77 to 0.59 g GAE kg⁻¹ from fresh fruit (Bravo *et al.*, 2015).

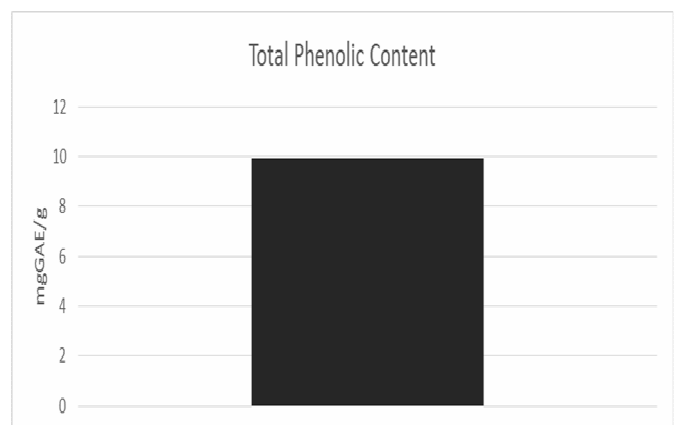


Fig. 4: Total Phenolic Content (mg GAE/g) of cape gooseberry obtained from Kolkata market.

Conclusion

The research analysis has scrutinized some of the qualitative trait of a Cape gooseberry procured from Kolkata market. It can be thus stated that nutritional and physical attributes of these fruits make them a distinct and lucrative

choice for the consumers. However, popularity of it in at least this part of the country is still at question. Cultivation practices are needed to be sounder for cape gooseberry for making it evolve as a better choice.

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