



## Research Paper

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# Growth and developmental changes of cape gooseberry (*Physalis peruviana* L.) fruits

■ D.B. SINGH, A.A. PAL<sup>1</sup>, SHIV LAL<sup>1</sup>, N. AHMED<sup>1</sup> AND ANIS MIRZA<sup>1</sup>

### Members of the Research Forum

#### Associated Authors:

<sup>1</sup>Central Institute of Temperate Horticulture, Rangreth, SRINAGAR (J&K) INDIA

#### Author for correspondence :

**D.B. SINGH**

Central Institute of Temperate Horticulture, Rangreth, SRINAGAR (J&K) INDIA

Email : [deshbsingh@yahoo.co.in](mailto:deshbsingh@yahoo.co.in)

**ABSTRACT :** Cape gooseberry (*Physalis peruviana* L.) is a solanaceous fruit grown for edible fruits, being eaten fresh, as dessert, appetizer, or dish decorator and can also be prepared in elaborate dishes in cakes, or used in making jams, sauces etc. Growth and developmental changes were studied from anthesis to harvesting stage (1 week to 8 weeks from anthesis) in cape gooseberry fruits of genotype CITH-CGB-20, one of the promising genotype of this region. During over 8 week growth period the proportion of fruit weight to that of calyx (husk) decreased linearly (1.3 g at one week to 20.81 g at eight week). The water content of the fruit pulp increased slightly during development. The water content of the calyx varied considerably, increasing during first four weeks of development and then decreased as fruit matures or begins to ripe/yellow. Changes in fruit firmness varied significantly during development stages, it increases rapidly during 2 – 3 weeks and 5 – 7 weeks stage. Fruit pulp showed gradual increase in TSS °Brix from 0.43 (1 week) to 4.177 (6 week) and rapidly to 8.253 (8 week stage). The acidity showed a slow increase during first 6 weeks (0.324 to 0.365%) and increased rapidly during 6-8 week of development (0.521). Ascorbic acid showed double sigmoid pattern and there was rapid change during 2-4 week of anthesis (5.880 to 8.380 mg/100g) and from 6-7 weeks of anthesis (8.677 to 10.717 mg/100g). Chlorophyll content showed moderate decrease during 1-5 week of anthesis (5.0 to 4.0mg/100g), whereas, decrease was rapid in later stages of development and reached 1.00 mg/100g at 8 week after anthesis. Carotenoids increased gradually in fruits from 0.213-1.617 mg/100g. Cape gooseberry may be harvested commercially (horticulture maturity) when the fruits are well formed and substantially filled the calyx, may be 6-8 weeks after anthesis.

**KEY WORDS :** Cape gooseberry, Composition, Fruit development, Physical characters, Quality

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Cape gooseberry (*Physalis peruviana* L.) is herbaceous solanaceous crop grown for edible fruits. It has highly significance for diversification in market with fresh production. It is usually cultivated as short cycle (3-4 months) annual crop but in absence of frost it can be perennial. In its region of origin it is grown in a wide altitude range from sea level to 3200m, with an intense solar radiation to humid and cloudy environment. (Neuz *et al.*, 1999). It is indigenous to South America but was cultivated in South Africa in the region of Cape of Good Hope during 19<sup>th</sup> century imparting the common name, "Cape gooseberry." It is mainly grown in the region of its origin and in India, S. Africa and Australia Hawaii (Fischer *et al.*, 1990; Chattopadhyaya, 1996). It can be

successfully grown and set fruit without problems if the minimum temperature is above 50 C (Peron *et al.*, 1989, Prohens and Neuz, 1994). Fruits of cape gooseberry are small 1-3.5 cm diameter: very juicy, aromatic yellow orange round berry at maturity contains many tiny seeds and is covered by large acrescent papery epicylx (Chattopadhyay, 1996), which gives them shape of a bladder. The fruit is tasty, having very good storability and attractive shape, determines it as a prospective crop for diversification in the temperate region. The fruit can be eaten raw, as a dessert, as an appetizer or as dish decorator. It can also be prepared in elaborated dishes in cakes or used in making jams etc. (National Research Council, 1989, Majumdar, 1979). It is high in vitamin A, B<sub>1</sub>, B<sub>2</sub>, B<sub>12</sub>, C and poly- phenols