



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(7): 2215-2216
© 2023 TPI
www.thepharmajournal.com
Received: 11-05-2023
Accepted: 19-06-2023

Sonia Dansena
Department of Fruit Science,
Pt K.L.S. CHRS, IGKV,
Raipur, Chhattisgarh, India

Dr. Shishir Prakash Sharma,
Assistant Professor,
Department of Fruit Science,
Pt K.L.S. CHRS, IGKV,
Raipur, Chhattisgarh, India

To study about biochemical changes (TSS, titrable acidity and TSS/acid ratio) of dragon fruit RTS during storage

Sonia Dansena and Dr. Shishir Prakash Sharma

Abstract

The current investigatory work entitled "study about biochemical changes (TSS, titrable acidity and TSS/acid ratio) prepared Product (RTS) during storage." was executed at Pomology Laboratory, Department of Pomology, Pt K.L.S. CHRS, Pendri, Rajnandgaon, IGKV, Raipur, Chhattisgarh during year 2019-2020. The analysis of chemical variation of RTS of dragon fruit at fortnight meantime for course of 45 days preservation by implementing CRD with 3 replication inside lab condition. Each replication comprised of 7 treatments for RTS. The RTS comprise of 10 percent pulp and 0.3 percent acidity and recipe is varied by different concentration of TSS. The RTS with treatment T7 comprising of 10% pulp, 0.3% acidity and 15% TSS got peak score in Total soluble solids and TSS Acid ratio, while acidity got peak score in case of treatment T1 comprising of 10% pulp, 0.3% acidity and 9% TSS.

Keywords: Dragon fruit (*Hylocereus costaricensis*), TSS, titratable acidity, TSS/acid ratio, RTS, replication, treatment, biochemical

1. Introduction

Dragon fruit (*Hylocereus* spp.) is a sweltering climate bearer climbing cactus. The genus *Hylocereus* belongs to Cactaceae family, which is a dicotyledonous flowering plant family, under Caryophyllales order. In Latin America it is also known belle of the night and condrella plant. It contains antioxidant such as flavanoids, phenolic acid and betacyanin and naturally fat free and high fibre. These is a low acid food and Its pH values ranges between 4.4 and 5.1 out of which malic acid forms major portion. (Nomura *et al.*, 2005) [3]. Biochemical estimation of fruit showed that the 100 gm fruit has moisture content of about 83-88%, titratable acidity between 0.20 to 0.30 mg lactic acid equivalents, total soluble solids (TSS) between 8-12°Brix. It is very attractive due to its unique and eye catching appearance. It derived its origin from the tropical and subtropical regions of Latin Americas, including North, Central and South America (Crane and Balerdi 2005; Luders and McMahan, 2006) [1, 2]. In 100 gram of fruit it contains 60 gm calories, 1.2 gm protein, 0 gm fat 13 gm carbs, 3 gm fibre, 3% of the RDI ascorbic acid, 4% of the RDI Fe, 10% of the RDI Mg. Fruit seeds composed of tocopherol and fatty acids (Tarpila *et al.*, 2005) [5]. These fruit have plenty of medicinal advantages which includes to let down cholesterol concentration, to stabilize blood sugar concentration, to fend off colon cancer, to shore up urinary function and bone, to crank up the brain workings, to mount up the sharpness of the eyes, to fend off memory loss, inhibits oxidation and recovery of wounds etc. Apart from this it has potentiality to advance the increase of probiotics in intestinal tract (Zainoldin and Baba, 2009) [6]. The dragon fruit assist in the digestion process, because it counteracts venomous substances such as heavy metal, and its habitual usage fend off asthma and cough.

This fruit is new to Chhattisgarh and is cultivated in some parts of Raigarh district (Kotra, Kharsia) Raipur, Rajnandgaon and Durg district. And there are rare work done in dragon fruit in India especially in processing. As hot climate and low rainfall is suitable for its cultivation so its area and production will increase in Chhattisgarh in future so there is need to standardize the recipe for preparation of useful products from it such as jam, jelly and beverages.

2. Materials and Method

The recent research on Study about biochemical changes (TSS, titrable acidity and TSS/acid ratio) prepared Product (RTS) during storage was conducted during 2019-20 in the laboratory of Department of fruit science, Pt K.L.S College of Horticulture and Research Station Rajnandgaon (C.G).

Corresponding Author:
Sonia Dansena
Department of Fruit Science,
Pt K.L.S. CHRS, IGKV,
Raipur, Chhattisgarh, India

It is located at 21.10°N latitude, and 81.03°E longitude and at an altitude of 307 m MSL under Chhattisgarh plains. It has tropical and dry spell throughout the year, However the temperature observed is 10 °C during winter and in summer reaches the 48 °C. This place bears hot windy climate during summer and precipitation annually of 1250 mm out of which approximately 85% is precipitated from third week of June to mid of September and remaining precipitate in month of October to February. May month has maximum temperature while December month has minimum temperature. The basic material used in this present research are firm, well developed and uniform ripened dragon fruit of *Hylocerus costaricensis* species which were obtained from farm of Chawda Bagh, Nandanvan Road, Raipur. And chemical and solution needed for analysis were provided by Fruit Science Processing laboratory, Pt. K.L.S College of Horticulture and Research Station Rajnandgaon C.G and Soil Science laboratory, S.K.S College of Agriculture and Research Station, Rajnandgaon C.G. Equipment and instruments required for analysis of product are provided by Soil Science laboratory, S.K.S College of Agriculture and Research Station, Rajnandgaon C.G.

The bottles of RTS beverages were stored under favourable environment for further analysis and observation upto 45 days and analysis conducted at 15 days interval. The Dragon fruit pulp/product was evenly crushed with a mortar and pestle. A drop of crushed pulp was laid on the prism of Hand refractometer and TSS was recorded as °Bx. Titrable acidity of RTS are estimated by procedure described by Rangana (1997) [7]. For estimation of total acid content 10 ml sample of RTS titrated against the standard solution of N/10 NaOH using phenolphthalein as indicator. The end point judged by light pink colour. The acidity expressed in percentage (%). By dividing total soluble solid of pulp to acid of fruit pulp, T.S.S / Acid ratio of different samples of product are obtained separately

3. Result and Discussion

The dragon fruit RTS shows following biochemical variation during storage. The Total Soluble Solid value of RTS at its initial preparation time peak TSS value observed was 15.10 for treatment T7(10 percent pulp15 percent TSS + 0.3 percent acidity).After 15 days storage of dragon fruit RTS peak Total Soluble Solid value observed was 15.20 with the treatment T7(10 percent pulp15 percent TSS + 0.3 percent acidity).After 30 days storage of dragon fruit RTS peak Total Soluble Solid value observed was 15.50 with the treatment T7(10 percent pulp15 percent TSS + 0.3 percent acidity. After 45 days storage of dragon fruit RTS peak Total Soluble Solid value observed was 15.70 with the treatment T7(10 percent pulp15 percent TSS + 0.3 percent acidity) At the time of preparation peak acidity value observed was 0.35 with the treatment T1(10 percent pulp9 percent TSS + 0.3 percent acidity).After 15 days storage of dragon fruit RTS peak acidity value observed was 0.37 with the treatment T1(10 percent pulp9 percent TSS + 0.3 percent acidity).After 30 days storage of dragon fruit RTS peak acidity value observed was 0.41 with the treatment T1(10 percent pulp9 percent TSS + 0.3 percent acidity.) After 45 days storage of dragon fruit RTS peak acidity value observed was 0.47 with the treatment T1(10 percent pulp9 percent TSS + 0.3 percent acidity) At the time of preparation peak TSS acid value observed was 55.91 with

the treatment T7 (10 percent pulp15 percent TSS + 0.3 percent acidity). After 30 days storage of dragon fruit peak TSS acid ratio value was 48.54 with the treatment T7(10 percent pulp15 percent TSS + 0.3 percent acidity).After 45 days storage of dragon fruit RTS peak TSS acid ratio value observed was 47.56 with the treatment T7 (10 percent pulp15 percent TSS + 0.3 percent acidity).

4. Conclusion

The RTS prepared from treatment T7 containing 10 percent pulp, 0.3 percent acidity and 15 percent TSS shows highest value of TSS, TSS Acid rate and they shows diminishing pattern with passage of course of time for 45 days.

5. References

1. Crane JH, Balerdi CF. Pitaya growing in the Florida home landscape. IF AS Extension, HS. 2005;1068:1-9.
2. Luders L, McMahon G. The pitaya or dragon fruit (*Hylocereus undatus*). Agnote. 2006;778:1-4.
3. Nomura K, Idle M, Yonemoto Y. changes in sugars and acids in pitaya (*Hylocereus. undatus*) fruit during development, The journal of Hort. Sci. and Biotech. 2005;80(6):711-715.
4. Ranganna S. Handbook of Analysis and Quality Control for Fruit and Vegetable Products. Tata McGraw Hill, New Delhi; c1977.
5. Tarpila A, Wennberg T, Tarpila S. Flaxseed as a functional food. Current Topics in Nutraceutical Research. 2005;3:167-188.
6. Zainoldin KH, Baba AS. The effect of *Hylocereus polyrhizus* and *Hylocereus undatus* on physicochemical, proteolysis, and antioxidant activity in yogurt. World Academy of Science, Engineering and Technology. 2009 Nov;60(3):361-6.
7. Rangana S. Hand book of analysis and quality control of fruits and vegetables products, Tata McGraw hill publ. Co., Ltd., New Delhi. 1997:88-9.