

# Changes of Ascorbic Acid Contents Of Fruits infected by Fungi During Storage

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## **Abstract**

In present investigation analyses of Changes of Ascorbic Acid Contents Of Fruits infected by Fungi during Storage were carried out .Fruit constitute an important part of human diet. Fruits are rich sources of sugars, amino acids, organic acids, vitamins and other nutrients but during pathogenesis various fungi and bacteria cause rot to a number of fruit cause biochemical changes which reduce their food and market values considerably which is unfit for consumption. The fruits were collected from local market . Ascorbic acid content of infected fruit were determined by volumetric method.

**Key words:** Ascorbic acid ,Volumetric method ,organic acids.

## **Introduction**

Vitamin -C (Ascorbic acid) is the most important vitamin in fruits and vegetables. Except human and other primates, most of the phylogenetically higher animals can synthesize vitamin C (L-ascorbate). More than 90% of the vitamin C in human diets is supplied by fruits and vegetables (including potatoes). Vitamin C is defined as the generic term for all compounds exhibiting the biological activity of L-ascorbic acid. Ascorbic acid is the principal biologically active form but L-dehydroascorbic acid, an oxidation product, also exhibits biological activity. Vitamin C is required for the prevention of scurvy and maintenance of healthy skin, gums and blood vessels. It functions in collagen formation, absorption of inorganic iron, reduction of plasma cholesterol level, inhibition of nitrosoamine formation, enhancement of the immune system, and reaction with singlet oxygen and other free radicals. As an antioxidant, it reportedly reduces the risk of arteriosclerosis, cardiovascular diseases and some forms of cancer<sup>1-5</sup> . The consumption of fruit juices and vegetables are beneficial and the health effects of fruits are ascribed, in part to ascorbic acid, a natural antioxidant which may inhibit the development of major clinical conditions including cardiovascular diseases and cancer<sup>6-8</sup>. Nutritive value of fruits is mainly due to their high vitamins contents especially vitamin -C. Anola, guava, mango, papaya and Indian plum are good sources of ascorbic acid. Vitamin- C of fruits decreased by post-harvest fungi. Tandon (1970) found that ascorbic acid of mango pulp was decreased due to *A. niger*. Vitamin C content of mango fruit was declined by *Phomopsis mangiferae* and *Phoma exigua* (Reddy and Laximinarayan, 1984. Similarly (Arya, 1993) found the mango fruit infected with *Botryodiplodia theobromae* showed decrease in vitamin- C content. Similar observations have been reported in guava (singh 1971) and in apple Chaudhary .Manjari.Kaur ,Manajeet (1980), Sharma Rohini and Sumbali Geeta(2009), banana Prasad M.M(1977), Jujube Singh ,Yash Paul and Geeta (2000), citrus Agarwal G.P and Ghosh(1979), Musambi ,Singh ,Anjana and Sinha K.K(1982).

## Material And Methods :

Collection of Samples for the study were brought from local market of Aurangabad city ,Maharashtra State. Infected fruits were brought in separate sterile polythene bags to the laboratory for estimation. A set of five fruits used for each test. All the samples were thoroughly cleaned using deionised water to remove adhering contaminants. For the analysis of vitamin- C in the samples, determination was done on the same day to counteract the instability of vitamin C.

**Isolation and Identification of Fungal Isolates.:** Sampling was done based on the presence of rot on fruits. Fruits were obtained stored in the refrigerator for preservation (Jones et al., 1991). Symptoms of different disease types were closely studied in the laboratory .

The isolation technique was similar to that used by Onyike and Maduewesi (1985). The mycelium was transferred to potato dextrose agar and the rot fungi were isolated and later identified. Fungal identification was carried out according to Domsch et al.(1980);Samson et al.(1980) and Rippon (1958) methods.

**Pathogenicity Test :** The pathogenicity test of the fungus was confirmed according to the Koch postulates. For the Further investigation healthy fruits were first washed with 2% sodium hypochlorite and allowed to dry. Two (2) mm hole was made on the fruits with cork borer and equivalent 2mm diameters of the fungal isolates were inoculated into the holes. The inoculated fruits were left for 2-7 days for fungal growth (Ogaraku and Usman, 2008).

**Titrimetric Determination of Vitamin C (Ascorbic Acid).** In Infected and healthy fruits, this was carried out using David (2004) method. Five (5)g of fruits was weighed and ground with pestle and mortar with few drops of glacial acid. This was transferred quantitatively with distilled water into a 40ml flask. One (1)ml of the dye was transferred into a conical flask and drop of dilute acetic acid was added. This was titrated with the suspension (fruit) from a burette and the volume that decolourized the dye noted, this procedure was repeated for the standard ascorbic acid in place of the fruit suspension. The volume of the standard that decolourized 1 ml dye also noted.

**Table 1.Ascorbic acid Content of fruits infected by Pathogen During Storage.**

Sr.No	Fruit Type	Vitamin –C in Mg Per 100 gm Of Tissue		Pathogen
		Healthy	Infected	
1.	Bannana	07	4.0	Fusarium sp
2.	Bannana	07	3.0	Gleosporium sp.
3.	Bael (riped)	08	5.0	Fusarium sp.
4.	Pine Apple	38	14.0	Fusarium sp.
5.	Zizypus	78	16	Mixed Fungi

6.	Apple	02	01	Rhizopus sp
7.	Amla	602	262	Penicillium sp
8.	Fig	05	02	Fusarium sp.
9.	Fig	05	01	Mixed Fungi
10.	Grapes	2.5	00	Aspergillus
11.	Guava	02	01	Phytophthora sp
12.	Guava	02	00	Mixed Fungi
13.	Plum	14	10	Mixed Fungi
14.	Lemon	38	12.00	Bacterial rot
15.	Lemon	38	15.00	Aspergillus sp
16.	Orange	31	22	Penicillium sp
17.	Sweet Orange	48	20	Aspergillus niger
18.	Sweet Orange	48	23	Fusarium sp
19.	Jamun	17	04	Rhizopus sp
20.	Papaya	58	17	Fusarium sps

### Result And Discussion :

Vitamin –c content of infected fruits declines .Fungi differ in their rapidity to reduce the content of Ascorbic acid.In Bannana there is 50% reduction of vit-c on 10<sup>th</sup> day of inoculation of Fusarium sp.and Gloeosporium sp .Grapes and Guava inoculated with Aspergillus and Phytophthora shows that total vanish of vit-c .(Chandra and Tandon,1963).There is gradual loss of Ascorbic acid ,it clearly indicates that there is directly deterioration of chemicals in stored fruits if they are infected .

### Conclusion:

It can be concluded that post-harvest fungi are responsible for changes in biochemical content of fruits,which degrade the quality of fruits which are unfit for consumption.

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