

# Biochemical Changes (Reducing Sugar) in Different Mango and Papaya Fruits Varieties Due to Post Harvest Fungi. (M.S) India

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**Abstract-** In the present investigation emphasis has been given on to study the changes in reducing sugar content of mango and papaya pulp due to post harvest fungi. It was found that maximum decrease in reducing sugar in local ( Kesar, Beed, Jalna) varieties of mango due to post harvest fungi. Reducing sugar content in local ( Jalna, Nanded, Hingoli) varieties of papaya was hampered due to post harvest fungi.

**Index Terms-** Changes in reducing sugar, post harvest fungi, mango and papaya fruit.

## I. INTRODUCTION

In India fruit have been found to be infected with several disease in the field as well as very significantly in the transport and storage. Most of the disease have been studied in detail in relation to epidemiology and management strategies. A post harvest fruit and food loss constitutes a vast complex of physical and biological changes due to micro-organism like fungi and bacteria.

1) Tanden (1970) 2) Pandey et.al, (1974), 3) Fush et.al., (1980), 4) Reddy and laxminarayana (1984) reported the changes in reducing sugar content in mango infected by *Aspergillus niger*. They found that there is decreases in reducing sugar content of mango fruit due to infection of a niger. 5) Chaudhar et.al., (1980) reported that *pestalotia anonicola*, *stachybotrys SP.* And *Trichoderma viride* were decrease the total sugar and increase the reducing sugar. Similarly *Cladosporium oxysporum* and *drechslera rostraata loquat* and capegoose- berry, respectively utilized their total sugar contents within ten days, 6) Singh, 1980. 7) Singh and Sinha (1982) found that *Aspergillus flavus* and *A. parasiticus* cause depletion in total, reducing and non reducing sugar of citrus sinesis fruit similar result were observed by 8) Singh and Sinha (1983) in guava fruit. They found that decrease in total, reducing and non reducing sugar of guava fruit was observed due to a *spergillus falvus* and *A. parasiticus*. 9) Bilgrami et.al., (1983) revealed that there was sharp decline in the level of total reducing and non reducing sugars of dry fruit during *Aspergillus flavus* infestation.

Studies on bio-deterioration of fruit were carried out. To study the bio-deterioration of the mango and papaya fruit, they were artificially inoculated with equal amount of sporelation of *A. alternata*, *Aspergillus favus*, *Aspergillus niger*, *Botryodiplodia theobromae*, *Colletotrichum gleosporiodes*, *Fusarium onysporum*, *phoma cariecare*, *penicillium chrysogenum*, *phytophthora nicotina* and *rhizopus stolonifer*.

After incubation period biochemical changes in mango and papaya pulp were estimated by standard biochemical method. It was observed that reducing sugar content of mango and papaya were found to be decrease due to some post harvest fungi.

## II. OBJECTIVE

In the present paper changes in reducing sugar content in mango and papaya due to post harvest fungi were discussed.

## III. METHODOLOGY

Changes in reducing sugar content:

The reducing sugar content in plant material was estimated by the procedure recommended by Oser (1979) as follows:

500 mg of pulp was taken in 50ml distilled water and boiled, then filtered further filtrate was diluted up to 100 ml. There folin - wu tubes were taken and to it following content were added.

- 1) Blank Tube - Distilled water 2 ml
- 2) 2 ml glucose 'C' solution
- 3) 2 ml filtrate in each tube 3 ml alkaline solution of copper was added.

Then tube was boiled in boiling water bath for 8 minutes. The tube were cooled under tap water and 2 ml of phospho molybdic acid solution was added which gave blue colour. Then this solution was diluted up to 25 ml distilled water and optical density was determined at 420 nm and the amount of reducing sugar present in pulp was calculated. Percent total sugar was calculated by following formula:

$$\text{M g sugar /100 mg sample} : \frac{\text{O.D of unknown} \times 100 \times 0.4}{\text{Conc. from graph} \times 2 \times W}$$

Where V= Volume of the filtrate  
W= Weight of the sample taken

## IV. RESULT AND DISCUSSION

Changes in reducing sugar (gm/100 gm pulp) content of mango pulp due to post harvest fungi

In order to study the bio-chemical changes in mango fruit due to post harvest fungi, five varieties viz kesar, local ( Beed, Jalna, Nanded and Aurangabad) varieties of mango were

selected. Spore suspension of test fungi was inoculated into healthy mango varieties. After seven days pulp of these deteriorated varieties was collected in separate containers. This pulp was used to estimate reducing sugar content and result are given in table 1.

It is clear from the table that *Botryodiplodia theobromae* showed maximum decrease in reducing sugar in kesar, local (Beed, Jalna) varieties while, it was due to *Aspergillus niger* in local (Nanded, Aurangabad) varieties of mango.

*Aspergillus flavus* was responsible for maximum depletion of reducing sugar contents kesar and local Aurangabad. As compared to other post-harvest fungi, *collectotrichum gloeosporiales* showed minimum decrease in reducing sugar contents in all varieties.

Changes in reducing sugar (gm/100 gm pulp) content of papaya pulp due to post harvest fungi. In order to study the

biochemical changes in papaya fruit due to post harvest fungi, five healthy varieties local (Jalna, Aurangabad, Beed, Nanded and Hingoli) varieties of papaya were selected. Spore suspension of test fungi was inoculated into these healthy varieties. After seven days pulp of these deteriorated varieties was collected in separate containers. This pulp was used to estimate reducing sugar content and results are summarized in table 2.

From the table it is observed that reducing sugar content in local (Jalna, Nanded and Hingoli) papaya varieties was hampered due to *Aspergillus niger* *Fusarium oxysporum* in local Beed and *Phoma caricae* in local Aurangabad were responsible for maximum depletion of sugar content *Alternaria alternata* and *collectotrichum gloeosporioides* caused depletion in the reducing sugar content of local Beed and local Jalna respectively.

**Table. 1**  
**Changes in reducing sugar (gm/100gm pulp) content of mango pulp due to post harvest fungi.**

Fungi	Varieties of Mango				
	Kesar	Local Beed	Local Jalna	Local Nanded	Local A'bad
<i>Aspergillus flavus</i>	5.9	6.1	6.9	7.9	4.1
<i>Aspergillus niger</i>	6.8	6.2	4.1	5.9	3.4
<i>Collectotrichum gloeosporioides</i>	6.7	6.6	6.0	7.0	5.3
<i>Botryodiplodia theobromae</i>	5.8	4.1	4.0	6.2	3.9
<i>Penicillium chrysogenum</i>	6.8	5.1	5.8	6.1	5.1
Control	9.9	9.0	9.2	9.4	8.1

**Table. 2**  
**Changes in reducing sugar (gm/100gm pulp) content of papaya pulp due to post harvest fungi:**

Fungi	Varieties of Papaya				
	Local Jalna	Local A'bad	Local Beed	Local Nanded	Local Hingoli
<i>Alternaria alternata</i>	2.80	3.10	3.00	2.60	3.00
<i>Aspergillus niger</i>	2.09	2.70	2.00	1.20	1.00
<i>Coletotrichum gloeosporioides</i>	2.10	2.50	2.60	2.30	2.80
<i>Fusarium oxysporum</i>	3.51	2.40	2.40	2.80	2.30
<i>Phoma caricae</i>	3.50	2.30	3.20	2.40	2.50
<i>Phytophthora nicotina</i>	3.60	3.80	3.70	3.80	2.90
Control	4.70	4.30	4.20	4.50	3.40

#### ACKNOWLEDGMENT

Authors are thankful to the Head of Department of Botany, Yashvantrao Chavan College Tuljapur, (M.S) India for their kind cooperation, encouragement and facilities extended to us.

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