



Comparative Effect of Vinegar, Baking Soda and Sugar Solution on Stem End Rot of Mango

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ABSTRACT

Mango suffers from several diseases at all stages of its life and of these stem rot is of great economic importance as it causes huge losses in mango production. Stem rot disease is a destructive disease of mango and it is known to occur in India and other mango growing countries. *Dothiorella dominicana*, *D. manqifera*, *Lasiodiplodiatheobromae*, and *Phomopsismanqiferae* are the dominant fungi associated with stem end rot. Attempts to control the disease by radiation, fungicides and hot water have been unsuccessful. The antibiotic was found ineffective. There are certain copper fungicides which prevent the stem end rot but they have side effects on the human beings. The present study was aimed to prevent the spoilage of mango due to stem end rot by using natural preservatives which are commonly used at home. Solutions of vinegar, baking soda and sugar were taken and the mangoes were dipped in them and kept for 6-10 hrs. These solutions had a positive effect on the mango.

Keywords: *baking soda, fungi, mango, stem end rot, sugar, vinegar.*

INTRODUCTION

Mangoes are juicy stone fruit from numerous species of tropical trees belonging to the flowering plant genus *Mangifera*, cultivated mostly for their edible fruit. The genus belongs to the cashew family *Anacardiaceae*. *Mangifera indica*, has been distributed worldwide to become one of the most widely cultivated fruits in the tropics. All the parts of the plant, namely, trunk, branch, twig, leaf, petiole, flower and fruit are attacked by a number of pathogens including fungi, bacteria and algae. They cause several kinds of rot and most importantly stem end rot which is of great economic importance as

they cause heavy losses in mango production. Stem rot disease is a destructive disease of mango and it is known to occur in India and other mango growing countries. *Dothiorella dominicana*, *D. manqifera*, *Lasiodiplodiatheobromae*, and *Phomopsismanqiferae* are the dominant fungi associated with stem end rot.

In fruit from drier areas, stem end rot may be a more serious post-harvest disease than anthracnose in mangoes. The peculiarity of the rot is that the disease initiates around the stem-end as brown round area and gradually spreads to the styler end covering the entire fruit. *Diplodia stem-end rot* incited by *Diplodiantalensis* is an important postharvest disease of ripe mango fruits.

There are many fungicides available in the market which are usually used for the stem end rot but these fungicides have side effects on human beings. In order to avoid these harmful effects natural methods can be used.

Materials and Method:

6 mangoes were taken, out of them three were effected by stem end rot and three mangoes were healthy each of the mangoes (one healthy and one diseased) were kept in vinegar solution, baking soda solution and sugar solution. Few mangoes which were healthy were kept separately.

Result:

The mangoes which were already effected by stem end rot spoilt completely, whereas the mangoes which were healthy had more shelf life than the mangoes kept separately without any medium. All the three media i.e. Baking soda, Vinegar and Sugar showed similar effect on the mangoes.

Mangoes before treating with the solutions:



Mangoes treated with Vinegar



Mangoes treated with baking soda



Mangoes treated with sugar solution



Mangoes kept as control



Discussion: Use of vinegar and sugar to prevent microbial growth is an ancient technique that remains important today for the preservation of foods. Baking soda is also used in many parts of the country to preserve foods. **Vinegar** is made from the fermentation of sugar and water solutions and is an effective natural **preservative**. The acetic acid in **vinegar** kills microbes and stalls food spoilage. Bacteria evolved in environments where the concentration of **sugars** and salts is the same as or lower than those inside the cell. High **sugar** concentrations cause the bacterium to lose water by osmosis and it doesn't have any cellular machinery to pump it back in against the osmotic gradient. This is also called as sugar curing. The other antimicrobial mechanisms of sugar include interference with a microbe's enzyme activity and

weakening the molecular structure of its DNA. Sugar may also provide an indirect form of preservation by serving to accelerate accumulation of antimicrobial

compounds from the growth of certain other organisms.

Conclusion:

The preservation of mangoes using solutions of Baking soda, Vinegar and Sugar was found to be effective and can be used as a convenient and cheap option for preservation of mangoes.

References:

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