

7th Indo-Global Summit and Expo on
Food & Beverages

October 08-10, 2015 New Delhi, India

Salicylic acid reduces the incidence of lenticels browning and improves fruit quality of mango

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Mango is called as the 'King of fruits' in India. It suffers badly from different postharvest problems but lenticels browning affect its export. Here, the external appearance of fruits is affected greatly which distract consumers and ultimately affects its trade. Hence, improving the external appearance of mango fruits is always a key concern for scientist working on fresh handling. For the control of this emerging problem, an experiment was conducted to know the effect of salicylic acid, a novel molecule on lenticels browning, physiological, biochemical and quality attributes of mango. This experiment was carried out using two indigenous ('Dushehari' & 'Langra') and two exotic ('Sensation' & 'St. Alexendrina') varieties of mango which were found to be prone to incidence of lenticels browning. The fruits of selected varieties were subjected to salicylic acid dip treatment at three different levels (200, 400, 600 ppm) along with control (water dip). After treatment, mango fruits were stored at ambient conditions ($35\pm 4^\circ\text{C}$ and $65\pm 5\%$ RH) for 10 days. Results revealed that among the varieties, 'Langra' exhibited the highest incidence of lenticels browning (85.1%) while 'Sensation' the lowest (14.7%). All treatments of salicylic acid had significant effect on reducing lenticels browning and other studied attributes. However, salicylic acid at 200 ppm was found to be most effective in reducing lenticels browning (33.7%) compared to untreated fruits (54.3%). This treatment level reduces the activities of enzymes such as polyphenol oxidase ($0.397 \Delta\text{A}410 \text{ O.D. min}^{-1}\text{mg}^{-1}$), peroxidase ($0.050 \Delta\text{A}470 \text{ O.D. min}^{-1}\text{mg}^{-1}$) and lipoxygenase ($3.227 \mu\text{mol}^{-1}\text{g}^{-1} \text{ fresh wt. min}^{-1}$) than control while significantly increases total phenol content (15.46 mg GAE/100 g), compared to control (12.19 mg GAE/100 g). Under physiological parameters, this level of treatment lowered the ethylene evolution rate ($0.521 \mu\text{l kg}^{-1} \text{ h}^{-1}$), respiration rate ($34.46 \text{ ml CO}_2 \text{ kg}^{-1} \text{ h}^{-1}$) and it also results insignificant decrease in postharvest decay (23.3%) over untreated fruits (73.3%) without effecting the total soluble solids and total carotenoids. Thus, it can be concluded that salicylic acid treatment (200 ppm) can be used in postharvest chain management of mango fruits for reducing lenticels browning, an emerging problem.

Biography

K Prasad has completed his MSc from Division of Food Science and Postharvest Technology, ICAR-Indian Agricultural Research Institute, India and at present pursuing his PhD from the same division under the guidance of Dr. R. R. Sharma (Principal Scientist, ICAR-IARI). He is awarded with ICAR-National Talent Scholarship (NTS), ICAR-Junior Research Fellowship (JRF), ICAR-SRF (Senior Research Fellowship) Qualified, ICAR-IARI SRF (Senior Research Fellowship). He was recently selected as Best Poster Presenter at Indian Horticulture Congress-2014.

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