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Title: Modified/Controlled Atmosphere Storage of Minimally Processed Mango Slices (Var. *Arka anmol*)

Author: [O.P. Chauhan](#), [P.S. Raju](#), [D.K. Dasgupta](#), [R. Shylaja](#), [Sudhakar Rao](#) and [A.S. Bawa](#)

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**Abstract:** Stabilization of mango slices (var. *Arka anmol*) in pre-cut form was achieved by using additive based minimal processing and modified atmosphere storage. The pre-treatments included use of firming agents in the form of calcium salt (1%), antimicrobials such as benzoate and sorbate (0.045%), ascorbic acid as anti browning agent (0.02%), mild acidification (0.4% citric acid) and UV conditioning (2.5 kJ m<sup>-2</sup>). The pre-treated mango slices were subjected to different Modified Atmospheric (MA) conditions i.e., active with gas mixture flushing (4% O<sub>2</sub> + 6% CO<sub>2</sub> + 90% N<sub>2</sub>) in polythene pouches; passive MA with air in polythene pouches; passive MA in PET bottles with silicone membrane window (2.25 cm<sup>2</sup>) and passive MA in plastic trays, over wrapped with cling film. The pre-treated produce was also subjected to storage under controlled atmosphere (CA) in a continuous gas mixture flushing system (3% O<sub>2</sub> + 8% CO<sub>2</sub> + 89% N<sub>2</sub>) at 8±1°C. The pre-treated samples in combination with MAP or CA showed significant (p<=0.05) physical, physiological and microbiological stability in terms of respiratory drift without anaerobiosis and retention of ascorbic acid as well as carotenoids. The kinetic model for L, a, b colour coordinates and shear strength followed first order linear model during storage of the product at low temperature (8±1°C) with high correlation coefficients ranging from 0.824 to 0.987 and 0.942 to 0.993 for tristimulus colour and shear force values, respectively. Microbial safety was also ascertained in terms of SPC, Coliforms, yeast and molds during storage. Shelf life of 14-46 days was obtained for pre-treated mango slices stored in the MA/CA at 8±1°C. The control samples without pre-treatment kept under similar storage conditions showed restricted shelf life (8-12 days) at 8±1°C. The study highlights synergistic effect of physical conditioning in combination with additives based minimal processing and MA/CA storage conditions to give longer shelf life and suitability of the mango variety for minimal processing and MA/CA storage in pre-cut form.

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