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Below is the abstract for symposium nr 598, abstract nr 1:

### Title:

**The spray of essential oils with passive modified atmosphere packaging to control stem-end rot of mango 'Karutha Colomban'**

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### Preferred presentation method:

Oral

### Abstract body text:

'Karutha Colomban' mango is more prone to stem-end rot (SER) disease that causes substantial postharvest losses in quality as well as quantity. The objective of this study was to use aqueous emulsions of basil (1.6  $\mu\text{L}/\text{mL}$ ), clove (2.0  $\mu\text{L}/\text{mL}$ ), cinnamon leaf (2.0  $\mu\text{L}/\text{mL}$ ) and cinnamon bark (1.6  $\mu\text{L}/\text{mL}$ ) oils as sprays with passive modified atmosphere packaging (MAP) in low density polyethylene (LDPE) bags as a bio-safe strategy to control SER of 'Karutha Colomban' mango stored at 12 – 14 °C and 85 – 90% of relative humidity. Distilled water and 0.1% (w/v) carbendazim treatments were used as negative and positive controls respectively. In-package respiratory gases were measured during storage for 8 days. Pathological, physicochemical, sensory evaluation and peel color of mango were assessed after transferring to ripening at the end of the storage period. All essential oil treatments combined with passive MAP have significantly reduced SER severity of mango to 0.3 – 1.1% when compared to the negative control without adversely affecting the physicochemical, sensory properties and peel color. Mango fruits treated with basil, clove and cinnamon leaf oils obtained a slightly higher preference by the sensory panel than other treatments. In-package  $\text{O}_2$  concentration was at 3.8 – 5.8%, while  $\text{CO}_2$  was at 4.3 – 5.0% at the end of the 8-day storage period. Respiratory gas levels attained a steady state equilibrium which resulted in extending the shelf life by reducing the metabolism of both commodity and associated microorganisms. Further, current treatments can be commercialized as eco-friendly treatment strategies to be used during transportation and storage of mango in local trade within one week and for exportation via air cargo that takes approximately 2 – 3 days.

### Keywords:

stem-end rot, in-package MAP, mango, essential oil, storage quality and shelf life