Development of an Artificial Ripening Protocol for Cultivated Variety of "Karuthakolomban" Mango (*Mangifera indica* L.) Available in Anuradhapura District, Sri Lanka

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Mango (*Mangifera indica* L.) is one of the widely cultivated fruit crop in the dry zone of Sri Lanka. This study aimed to develop an artificial ripening protocol for mango cultivated variety "Karuthakolomban" available in Anuradhapura district, Sri Lanka, using Ethephon (2-chloroethyl phosphonic acid) at different levels of concentration as a ripening agent to reduce post-harvest losses in destination markets. Selected mangoes were treated with Ethephon at three levels of concentrations (100, 150 and 200 ppm) and exposure times (12, 18 and 24 hours) in an artificial ripening chamber. The experiment was carried out at 30 ^{o}C±2 for 5 days up to ripening of mangoes. Untreated samples were used as control and kept for 5 days under similar conditions. During the ripening, physiochemical parameters of fruits were analyzed continuously for 5 days during storage. The treatment which exposed to 100 ppm at 12 hours Ethephon showed a gradual decrease of firmness (5.59±0.43N) and titratable acidity (0.5±0.06%) and total chlorophyll content (8.1±0.28 mg/L), whereas, some parameters, showed an increasing trend such as total soluble solids (19±0.8%), fructose (6.68±0.14 mg), sucrose (13.94±0.09 mg), ethylene emission (310.13±0.1 ppm), peel and flesh color (L*-68.12±0.01, a*-1.25±0.98, b*-40.63±0.9), pH (3.5±0.06), and weight loss percentage (5.27±0.75%). Sensory evaluation was carried out to check the parameters such as peel and flesh color, taste, aroma, texture and overall acceptability using 30 untrained panelists by using 5 point hedonic scales. Samples treated with 100 ppm Ethephon for 12 hours of exposure time exhibited the highest overall acceptability (92.5) compared to 150 and 200 ppm Ethephon dosages. Furthermore, 100 ppm dosage Ethephon treated samples with 12 hours of exposure time attained their marketable stage within 3 days compared to other treatments. Therefore, this study revealed that 100 ppm Ethephon dosage for 12 hours of exposure time is the best treatment for ripening of mango variety "Karuthakolomban" to safeguarding quality and storability.

Keywords: Artificial ripening, Ethephon, Exposure period, Mango