

**Title** 1-Methylcyclopropene (1-MCP) and heat treatment affected weight loss and ethylene biosynthesis of 'Sekaki' papaya during cold storage

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### Abstract

The effect of 1-methylcyclopropene (1-MCP) on weight loss and ethylene biosynthesis during storage of 'Sekaki' papaya was investigated through the measurements of ethylene production, 1-aminocyclopropane-1-carboxylic acid (ACC) level, ACC synthase (ACS) and ACC oxidase (ACO) activities. Effect of 1-MCP treatment, heat (HT) and a combination of 1-MCP treatment and compared the heat without any treatment (NHT) on 'Sekaki' papaya wrapped in polyethylene film (PE) and stored at low temperature (10°C) and after transferred to ambient temperature was studied. Trend of weight loss with treatment was found to increase very slowly during storage at 10 ° C and after 28 days of storage, the percentage of weight loss in the control of the ambient temperature is more significant than compared to during storage at 10°C. Clearly shows that increasing the percentage weight loss 'Sekaki' papaya after the cold is kept lower than the ambient. Behaviour between the combination 1-MCP and heat with 1-MCP showed no significant ( $p>0.05$ ) difference until the end of the ethylene production of ripening fruit as well as heat treatment (HT) and without any treatment (NHT). While for HT and NHT change behaviour ACS activity higher than on the behaviour in which there is a difference ( $p<0.05$ ) between it and the control means. Similarly, the ACO activity in 'Sekaki' papaya also showed increased activity in line with ACS, but low activity during early stages and reached maximum activity at the 50% yellow and 75% decrease in the level of yellow. Higher and lower levels of ACC, ACS and ACO activities are in accordance with the trend to change the given combination of papaya heat treatment and 1-MCP, and 1-MCP alone but slightly lower than the HT and NHT and control. Combined effect of heat treatment and 1-MCP on 'Sekaki' papaya stored in 10°C for 4 weeks and also after being transferred to the ambient temperature until the fruit reaches 100% yellow stage of ripening has shown its effectiveness delaying weight loss and inhibit biosynthesis of ethylene.