B-68 A study on physio-chemical changes in calcium carbide treated mango variety *Kaew*

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Mango variety Kaew,grown in Thailand, is not attractive (due to its fibrous nature) for fresh consumption. At proper maturity, the fruit is physiologically mature and unripe. Usage of artifical ripeners such as ethylene, acetylene only improved the colour while aroma and flavour remained poor. The objective of the research was to study the physio-chemical changes in calcium carbide treated mango and to select the best dosage for fruit ripening.

The average fruit weight, specific gravity, moisture content, total soild, total soluble solid (TSS), pectin, alcohol insoluble solid, firmness of fruit (with skin and flesh) and Hunter colour value a, b, l (fruit skin and flesh) were determined from the treated samples with 6g/4kg (calcium carbide/fruit), 9g/4kg 12g/4kg and the control. For mature green mango, mean fruit weight of 238 g, specific gravity (1.046, 86.51% moisture content (wet basis), 13.62% total solid, 8.95% alcohol insoluble solid, 12.76% total sugar and 1.67% pectin content were recorded. The measured colour values (average) of skin and flesh were - 10.25 (a), 10.07 (b), 39 (l) and - 4.66 (a), 25.35 (b), 76.05 (l) respectively. On the 7th day total sugar content of treated mango 12g/4kg was increased by 54% while alcohol insoluble solid and pectin were reduced by 85% and 47.3% respectively. TSS content recorded on the 7th day were 16.9% (12g/4kg), 14.28% (9g/4kg), 11.83% (6g/4kg) and 9.73% (control). In mature green mango, recorded acidity 1.41% was reduced by 37.58% in treated mango (12g/4kg) on the 7th day of ripening, while in untreated mango the reduction of acidity was 14.18%. Acidity of treated mango (12g/4kg) was significantly different ($p=0.05$) from treated mango with 6g/4kg, 9g/4kg and the control. Firmness of mature mango was 42.88 kg/cm^2, during ripening at 5th, 6th and 7th day firmness of treated mango 12g/4kg were reduced to 12.68kg/cm^2, 3.12kg/cm^2 and 2.77 kg/cm^2 respectively. The skin colour, a (green/redness), b (blue/yellow) and l (lightness) values of the mature mango was -12.71, 18.16 and 43.72 respectively.

On the 7th day, a value has been increased to 4.81 (12g/4kg), 3.75 (9g/4kg), 1.96 (6g/4kg), -1.75 (control) and the values were significantly different over the control ($p= 0.05$). The b value at mature stage was 18.16 and increased during the ripening progress.

Calcium carbide treatment 12g/4kg (or acetylene gas 1200 ppm) was the best dosage for ripening of mature green mango variety *Kaew*. The optimum ripening stage for the mass scale processing was gained with lowest firmness and the most acceptable colour after 7 days of ripening.

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