Evaluating the Efficacy of Smoke-Water towards the Ripening of Banana

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Fruits are a vital source of essential nutrients and vitamins in our diet and they attain full maturity during ripening. Currently, the application of artificial ripening agents has become widespread due to economical and commercial uses. These agents have been reported to contaminate the fruits with toxic heavy metals and affect their nutritional quality. The present study was conducted to evaluate the effect of smoke-water derived from natural biotic products including rice husk, coconut shells and pines cones, on ripening of bananas in comparison to calcium carbide. The results revealed that application of smoke water extracts accelerated the ripening time of bananas in contrast to calcium carbide and naturally ripened fruits. Biochemical analysis indicated that fruits administered with different concentrations of calcium carbide showed increased sugar content and TTA, whereas moisture content and vitamin C were found to decrease with increasing calcium carbide concentrations. Smoke water treatment resulted in higher composition of reducing sugars and vitamin C, however no significant difference was observed in TTA and moisture content. Antimicrobial activity of smoke water extracts was also assessed on three different bacterial strains including ATCC cultures of E. coli, Staphylococcus. aureus and Bacillus cerus respectively, which showed large inhibitory zones compared to standard sample. The quantitative analysis of different elements in calcium carbide and smoke-water treated bananas using Inductively coupled plasma mass spectrometry (ICP-MS) revealed increased concentrations of As, Pb and Ni in calcium carbide treated fruits, while all the heavy metals were found to be lower than the permissible levels set by FAO/WHO in smoke-water treated bananas.