

Effect of Ethylene and Acetylene Treatments on Phenolics, Flavonoids and Antioxidant Activity of Ambul Banana (*Musa acuminata*, AAB)

S.D.T. Maduwanthi* and R.A.U.J. Marapana

*Department of Food Science and Technology, Faculty of Applied Sciences,
University of Sri Jayewardenepura, Nugegoda 10250, Sri Lanka
tharaka@sci.sjp.ac.lk

Banana is one of the most consumed fruits in the world. It is rich in bioactive compounds. Since banana usually undergoes induced ripening, it is important to study the effects of ripening agents on nutritional value of banana. The present study was a comparison of total phenolics, total flavonoids and antioxidant activity in flesh of Ambul banana (*Musa acuminata*, AAB) ripened using ethylene and acetylene generated by Ethephon and calcium carbide, respectively. Banana in same maturity stage were subjected to 1000 ppm ethylene and 1000 ppm acetylene and kept at 20 °C and 80-85% RH until they are fully ripened. A control sample was kept at similar conditions without any treatments allowing natural ripening. The samples were analyzed for total phenolic content (TPC), total flavonoid content (TFC) and antioxidant activity (DPPH, ABTS and FRAP assays) at fully yellow stage (Stage 6). TPC and TFC in control sample were 39.69±0.77 mg of GAE/100 g fresh weight and 2.19±0.14 mg of QE/100g fresh weight, respectively and were significantly higher ($p < 0.05$) than those in treated samples. There was no significant difference ($p < 0.05$) in TPC and TFC between ethephon and acetylene treated banana. ABTS, DPPH and FRAP values showed the similar behavior having significantly high scavenging activities in naturally ripened banana compared to treated samples. Ethephon treatment showed the lowest ($p < 0.05$) antioxidant activity where DPPH activity was 409.85 ± 0.96 mg TE*/100 g and ABTS activity was 906.95 ± 1.74 mg TE*/100 g. FRAP activity values were not significantly different ($p < 0.05$) in acetylene and ethephon treatments. The result showed that ethephon and acetylene treatments at 1000 ppm level can considerably affect bio active compounds in banana.

Keywords: Artificial ripening, Bioactive compounds, Antioxidant activity, Mysore banana

This study was supported by Research Grants – University of Sri Jayewardenepura under ASP/01/RE/SCI/2018/40.