Effects of extraction solvents ratio and methylation time for the determination of fatty acids from rambutan seeds kernel by gas chromatography-flame ionization detector

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Abstract: The effect of solvents used for extraction of fatty acids from rambutan seeds kernel was investigated. The suitable ratio of dichloromethane-methanol-hydrochloric acid to obtain the highest efficiency was 2:1:0.02 (v/v) followed by, sonication for 10 min. The highest peak area was received after methylation at 80 °C for 4 hours. GC-FID was performed by using DB-225 column (20 m x 0.10 mm, 0.1μm film thickness). Helium was used as carrier gas at 0.3 mL/min. Injector and detector temperatures were 240 °C. Injection volume was 1 μL. Split ratio was set at 100:1. The oven program started at 150 °C for 0.5 min, rising to 200 °C at a rate of 100 °C/min held for 1 min and then 220 °C at a rate of 10 °C/min held for 12 min. The last fatty acid came out at 15.10 min. Five main fatty acids in Rongrean rambutan seed were Palmitic acid (C16:0) 8.20±0.16%, Palmitoleic acid (C16:1n7) 0.80±0.04%, Stearic acid (C18:0) 10.68±0.12%, Vaccenic acid (C18:1n7) 67.88±0.30% and Linoleic acid (C18:2n6) 12.45±0.16%. Similar composition of fatty acids was found in Seechompoo rambutan seed as followed: Palmitic acid (C16:0) 8.34±0.39%, Palmitoleic acid (C16:1n7) 0.69±0.04%, Stearic acid (C18:0) 11.89±0.13%, Vaccenic acid (C18:1n7) 66.97±0.26% and Linoleic acid (C18:2n6) 12.12±0.28%.

Keywords: Fatty acids; Rambutan seeds kernel