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Research Article

MULTIPLE MYCOTOXIN ANALYSIS IN ARECA SEED OIL USING ULTRA PERFORMANCE LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY (UPLC-MS/MS)

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ABSTRACT

Analysis of mycotoxins in Areca seed oil is constrained by matrix complexities, such as fats and polar compounds, which affect extraction efficiency and accuracy. This research was performed to propose a method for extraction and analysis of mycotoxins in Areca seed oil using UPLC-MS/MS. Samples were three varieties of *Areca cathecu* seeds with solid phase extraction (SPE) using Carbon/Primary Secondary Amine (carb/PSA), followed by analysis using UPLC-MS/MS. The proposed method went through accuracy validation. The results of UPLC-MS/MS analysis with Carb/PSA extraction were proven optimal for detecting 24 mycotoxins with a high recovery rate (95-102%). The validation results fulfilled the requirements with a test range of 0.5-250 ng/g and a LOQ of 0.5 ng/g. Linearity R^2>0.99 and % RSD <RSD_{max} for intra- and inter-day precision. Accuracy is assessed at LOQ (-50% to 20%), 10LOQ (-30% to 10%), and 100LOQ (-20% to 10%). There was no significant difference ($p<0.05$) for method precision with LC-ID-MS/MS and certified reference materials (CRM). AFB1 dominates in the three varieties of *Areca catechu* in Indonesia with a range of 2.56 - 3.24 ng/g and other potential dangers from mycotoxins<LOQ such as ZEN, DON, T2, HT2, and OTA.