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Toxicological evaluation on the different extraction methods of cocoa fresh beans based on brine shrimp bioassay

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Statement of the Problem: Various studies showed cocoa beans contains high phenolic compounds which has the potential to be used as an anti-oxidant in products development. Therefore, efforts to extract these phenolic compounds from cocoa fresh beans had been carried out by many researchers based on various extraction methods. Nevertheless, the safe uses of these cocoa extracts are not well established.

Methodology: Four extraction methods on cocoa fresh beans were carried out. There was aqueous extraction on cocoa fresh beans; solvent (55% ethanol+45% water) extraction on cocoa fresh beans; aqueous extraction on defatted cocoa fresh beans and solvent (55% ethanol+45% water) extraction on defatted cocoa fresh beans. Temperature and extraction duration were fixed at 80°C and 15 minutes, respectively. Assessment of toxicity of these cocoa extracts was determined after 24 hours of exposure of the brine shrimp lethality assay to the tested sample.

Findings: No survival of population of the brine shrimp lethality assay on all the defatted samples, regardless of aqueous or solvent extraction methods. No death was observed in the brine shrimp lethality assay after 24 hours exposure to the 'aqueous extraction on cocoa fresh beans' sample.

Conclusion: Cocoa extract based on aqueous extraction from cocoa fresh beans without defatting processes showed no toxic potential in humans.

Biography

Samuel Yap is a Researcher working with the Malaysian Cocoa Board. His expertise is in cocoa based products development. Currently, he is working on the potential uses of cocoa as an anti-oxidant in topical application product development.

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