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The Remediation of Copper Ions by Shoot Cultures of Solanum Melongena and Its Influence on The Production of Phytosterols and Phytosteroids

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Abstract— **This study aimed to observe the remediation of copper ions by shoot cultures of Solanum melongena and its influence on the production of phytosterol(s) and phytosteroid(s). The cultures were able to remove 46.6-66.5% of the ions from media containing 80-320 μM of the ions and accumulated them in their biomass. Application of copper ions concentration higher than that of control Murashige and Skoog media modified with the addition of benzyladenine 4 μg/L caused a decrease in total free sterols content of the cultures. The higher the copper ions concentration, the higher the decrease in total free sterols content was. Spotting the hydrolysate extracts of the cultures on tin layer chromatography (TLC) plate, developing using a mixture of $CHCl_3$:CH_3OH (10:1), and spraying the spots by Dragendorff's reagent–followed by heating for 5 minutes at 1000C, there was a blue spot with Rf (retardation factor) value similar to that of standard (solasodine). The chromatograms of gas chromatograph (GC) showed that the retention time (Rt) of certain substance contained in the extracts is similar to that of solasodine. Verification using mass spectrometer (MS) showed that the ionic fragments of the substance are similar to those of standard solasodine (dilute). It could then be predicted that the shoot cultures of Solanum melongena were be able to produce solasodine. Further verification is needed to ensure whether it was solasodine or not; it can be conducted by using nuclear magnetic resonance (NMR).**

Keywords-Solanum melongena, copper ion, phytosterols, phytosteroids, shoot culture.