

EFFECTIVENESS OF DIFFERENT WASHING AGENTS IN REMOVING PESTICIDE RESIDUES FROM *GOTU KOLA* (*Centella asiatica*)

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Human health is severely affected by the persistence of hazardous pesticide residues in agricultural food crops. This study aimed to investigate the effectiveness of different washing agents, aqueous extract of guava leaf powder (A₁), aqueous extract of wood apple leaf powder (A₂), aqueous extract of activated charcoal powder (A₃) and water (A₄), in removing pesticide residues in *Centella asiatica*. Initially, Azoxystrobin (AZ) was sprayed on protectively cultivated 3-month-old *C. asiatica* plants at the recommended rate (500 mL ha⁻¹). After four days from AZ application, the plants were harvested and subjected to washing treatments with A₁, A₂, and A₃ at three different concentrations (2%, 4%, 6% (w/v)) at three different time durations (5, 10, 15 min.) except A₄ (only 15 min.). The ozone bubbling method was used as a positive control (C_p) while the untreated sample served as the negative control (C_n). AZ residues were extracted by the QuEChERS method and detected via UHPLC (RP; C18 column; mobile phase- acetonitrile and water at 80:20 ratio; flow rate⁻¹ mL min⁻¹) under the wavelength of 245 nm in UV-Vis range. Results revealed significant differences ($p < 0.05$) among the washing agents and controls, in the order of A₃ > A₁ > A₂ > C_p > A₄ > C_n. The highest residual level of AZ was reported by C_n (69.40±0.77 ppm) while the lowest residual level was reported by A₃ (10.62±0.11 ppm) with 4% concentration at 15 min. Further, A₁ and A₂ also showed significant reduction ($p < 0.05$) in AZ residual levels compared to the C_p (18.96±0.34 ppm). The findings suggest that the activated charcoal extract (A₃) has an increased capability to be utilized as a washing agent to eliminate excessive azoxystrobin pesticide residues.

Keywords: Activated charcoal, Azoxystrobin, Guava leaf, Ozone bubbling, Wood apple leaf