

**Assessment of Organochlorine Pesticide Residue Levels in the Roots of *Mondia Whitei*
Linn (Hook.F) Sleels and *Cryptolepis Sanguinolenta* (Lind L) Schl Medicinal Plants Used
in Traditional Medicine**

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ABSTRACT

Studies were conducted to assess the levels of organochlorine pesticide (OCP) residues in the roots of *Cryptolepis sanguinolenta* and *Mondia whitei*, medicinal plants used in traditional medicine in Ghana. Soil samples where the plants were collected were also investigated. The effect of seasonal variation on the levels of the OCP residue in the roots of *Cryptolepis sanguinolenta* and *Mondia whitei* as well as the soil sample has been studied. The plants were further characterised in terms of its phytochemical properties. In all fourteen OCP residues were detected of which seven are among the banned pesticides of the Environmental Protection Agency (EPA) of Ghana. The detectable compounds were -HCH, o-HCH, y-HCH, heptachlor, aldrin, y-chlordane, c-endosulfan, p,p'-DDE, dieldrin, endrin, -endosulfan, p,p'-DDD, P,P'-DDT and methoxychlor. The mean concentrations of fourteen OCP residues were investigated using a Varian CP-3800 Gas Chromatograph equipped with a ^{63}Ni electron capture detector. Kwahu-East and Biakoye districts of the Eastern and Volta Regions of Ghana were the study areas. The mean OCP residues concentrations for all the samples in the dry season ranged from 0.005 mg/kg to 0.095 mg/kg. The highest mean concentration of 0.095 mg/kg was recorded for died in soil sampled from Biakoye district while the lowest mean concentration of 0.005 mg/kg was also recorded for Methoxychlor in *Mondia whitei* sampled from Biakoye district.

In the case of wet season, mean OCP residues levels for all the samples investigated also ranged from not detected to 0.026 mg/kg, with the highest residue concentration of 0.026 mg/kg obtained for heptachlor in *Mondia whitei* (Mn) sampled from Biakoye district. The mean OCP residues concentrations in various matrices were much higher in the dry season compared to those of the wet season. Generally, the mean levels of the OCP residues in the plants species were below maximum residue limits set by FAO/WHO Codex Alimentarius Commission and United States/European Pharmacopoeia. However, residue levels obtained for heptachlor in *Mondia whitei* from K wahu-East district, residue levels obtained for the sum of aldrin and dieldrin in *Mondia whitei* from Biakoye and K wahu-East districts as well as residue levels obtained for the sum of aldrin and dieldrin in *Cryptolepis sanguinolenta* from Biakoye district during the dry season were higher than WHO and FAO set limits. The ratio of DDE plus DDD to DDT in most of the samples analysed was greater than one, suggesting that current levels primarily originate from previous contamination and environmental persistency.

There was also great level of significant difference ($P < 0.05$) that existed in most of the OCP residues detected in the samples collected from the Biakoye District during the dry season. Correlation analysis also showed very weak relationship between OCP residues in the plants and soil samples collected from the two districts during the dry and rainy season.

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