

Heavy metals content and health risk assessment of the processed tobacco from Malaysian cigarettes

ABSTRACT

Study determined the concentration of heavy metals in the selected tobacco of the commercial and do it yourself (DIY) cigarette available in Malaysian market. Tobacco was sampled based on the type and flavor (N=24). The samples were oven dried (48 hr), ground and sieved before analyzed using XRF technique. The highest element detected was Fe (1155.81 ±212.25 mg/ kg), followed by Mn (398.13±84.52 mg/kg), Zn (79.61±39.27 mg/kg), Cr (40.96±14.73 mg/ kg) and Cu (36.11±9.50 mg/kg). Elements with low concentration were Ni (8.13±1.46 mg/kg), Cd (0.88±1.67 mg/kg), Pb (0.63±0.94 mg/kg), Hg (0.21±0.46 mg/kg) and As (0.03±0.07 mg/kg). Moderate correlation was detected between As-Pb (r=0.57, p=0.004), Cd-Pb (r=0.484, p=0.016), Cr-Mn (r=-0.491, p=0.015), Cr-Pb (r=-0.433, p=0.034), Cu-Hg (r=0.432, p=0.035), Mn-Ni (r=-0.575, p=0.003), Mn-Pb (r=0.414, p=0.044) and Ni-Pb (r=-0.579, p=0.003). High correlation was detected between Cr-Ni (r=0.845, p< 0.001). Significant non-carcinogenic and carcinogenic health risk were determine. Heavy metals were detected in the tobacco and significant health risk was determined.

Keyword: Cigarette; Tobacco; Heavy metals; Health risk