

Toxic heavy metal (Pb and Cd) content in tobacco cigarette brands in Selangor state, Peninsular Malaysia

ABSTRACT

Cadmium (Cd) and lead (Pb) are ubiquitous metals widely distributed in the environment, resulting in toxic health effects. This project aims to evaluate Pb and Cd as toxic elements in 15 different tobacco cigarette brands produced and/or sold in Selangor state, Peninsular Malaysia. The concentrations of Pb and Cd in all tobacco brands tested in this study were determined using the air-acetylene flame atomic absorption spectrophotometer (AAS). On average, the concentrations of Pb and Cd in different tobacco brand samples ranged from 3.05 and 0.80 $\mu\text{g/g dw}$, respectively. The results indicate that assessment mean values of Pb inhaled from smoking one packet of 20 cigarettes were in the range of 1.55–3.51 μg . Furthermore, the concentration of Cd inhaled per packet of cigarettes (20 sticks) is estimated to be 0.04–0.36 μg . However, there was a significant difference in the concentrations of Pb and Cd between the different brands of tobacco cigarettes, among cigarette prices (cheap versus expensive) of tobacco brands. In conclusion, cigarette smokers in Selangor, Malaysia, are heavily exposed to Pb and Cd, and such exposure could adversely affect their health in the long term. The impact of toxic heavy metals on smokers in this state would be an area for future research.

Keyword: Heavy metals; Cigarette brands; Lead; Cadmium; Human health