



Assessment of Some Potent Human Health Risks of Heavy Metals in Cigarette Filler from Multiple Brands in Erbil City

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ
صدق الله العظيم

سورة البقرة الآية 32

Supervisor Certificate

This research project has been written under my supervision and has been submitted for the award of the degree of BSc. in (Physics).

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Date: 4 / 4 /2024

I confirm that all requirements have been completed.

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Date : 4 / 4 /2024

Defecation

This project is dedicated to:

Allah Almighty, my Creator, and my Master,

My great teacher and messenger, Mohammed (May Allah bless and grant him), who taught us the purpose of life,

My homeland Kurdistan, the warmest womb,

The Salahadin University; my second magnificent home;

My great parents, who never stop giving of themselves in countless ways,

My beloved brothers and sisters;

To all my family, the symbol of love and giving,

My friends who encourage and support me,

All the people in my life who touch my heart.

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SUMMERY

The primary objective of this study was to determine whether local and imported cigarette brands used in the Iraqi Kurdistan region have elevated levels of metals or not. Seventeen brands of imported cigarettes commonly available in Erbil, were randomly taken from the retail market in Erbil city by XRF. In fact, toxic metals such as Aluminum (Al), Cadmium (Cd), Chromium (Cr), Arsenic (As), and Lead (Pb) are found in tobacco, cigarette paper, filters, and cigarette smoke. As well as, we found that the higher concentration of the heavy metals was found in the lower price of the cigarettes. The role of these metals in the pathophysiology of diseases caused by cigarette smoking is poorly understood. There was a large variability in Pb, Cd, and Cr content of samples of cigarettes in the present study. Pb concentration was the highest, followed by Cr while Cd was the lowest. The investigation confirmed that most of the Iraqi Kurdistan region imported cigarettes in Erbil are contaminated with Pb, Cd, and Cr, and quantitatively their distribution is clearly above the safer limits of WHO.