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## **LOSS OF METALS FROM TOXICITY TESTING: EFFECT OF USING DIFFERENT KINDS OF SUBSTRATES AND FOOD**

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### **ABSTRACT**

In toxicity testing, one of major problem is maintaining a constant concentration of the test chemical in water. This study has been conducted to assess loss of metals from solution using plastic (polystyrene) petri dishes, and the effect of using different kinds of substrate (leaf and cotton gauze), food and equilibration. Three heavy metals have been used in this study i.e. zinc, cadmium and copper. This study showed that in experiments with copper and cadmium, a very significant differences between using leaf and not using any leaf as substrate in affecting the reduction of metal concentrations. The presence of food (rabbit pellet) with leaf showed no significant effect in reduction of metal compared with leaf alone. Seventy two hours equilibration resulted in a significant reduction of the loss of metal from solution. However, equilibrating metal solution with leaf and without leaf showed no significant effect on loss of metal from solution for any metals (Zn, Cd and Cu). Using a different substrate (cotton gauze) with 72h equilibration caused no difference in reduction of metals from solution for copper, cadmium and zinc compared with leaf. Generally, the higher the metal concentration used in solution, the higher the reduction that occurred and between the three metals, zinc showed the most reduction followed by copper and cadmium (Zn>Cu>Cd) and the highest reduction of metal occurred after 10 hours of exposure.

### **ABSTRAK**

Bagi kajian ketoksikan, salah satu masalah utama adalah untuk mengekalkan kepekatan bahan kimia dalam larutan. Kajian ini telah dijalankan bagi mengkaji pengaruh penggunaan substrat yang berlainan (daun dan kain kasa), makanan dan kesan penyeimbangan logam terhadap kehilangan logam daripada larutan menggunakan piring petri plastik (polystyrene). Tiga logam berat telah dikaji iaitu zink, kadmium dan kuprum. Hasil kajian in menunjukkan bagi eksperimen menggunakan logam kuprum dan kadmium, terdapat perbezaan yang sangat signifikan terhadap kehilangan logam tersebut apabila menggunakan daun berbanding jika tidak menggunakan daun. Kehadiran makanan (pelet arnab) dengan daun tidak menunjukkan kesan yang signifikan terhadap kehilangan logam daripada larutan berbanding penggunaan daun sahaja. Penyeimbangan logam dalam larutan bersama daun dan tanpa daun menunjukkan kesan yang tidak signifikan terhadap kehilangan logam daripada larutan bagi semua logam kajian. Penggunaan substrat yang berlainan sama ada kain kasa atau daun dengan penyeimbangan logam selama 72 jam tidak menunjukkan perbezaan yang signifikan dalam pengurangan logam. Secara umumnya peningkatan kepekatan logam dalam larutan akan menyebabkan peningkatan kehilangan logam tersebut daripada larutan dan antara tiga logam kajian, didapati logam zink menunjukkan kehilangan yang paling tinggi daripada larutan diikuti oleh kuprum dan kadmium manakala kehilangan logam paling tinggi didapati selepas 10 jam pendedahan.

Key words: metal, loss, equilibration, substrate, food

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