

**AN ASSESSMENT OF LEAD CONTAMINATION OF FREE RANGE
POULTRY EGGS IN HURUMA AND LANGAS IN ELDORET
MUNICIPALITY.**

DECLARATION

I, the undersigned declare that the content of this thesis is original and has not been submitted to any institution of higher learning for a degree.

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ABSTRACT

The determination of lead in eggs is essential in establishing of the potential health effects of this element to human beings. Lead is toxic and persistent in the environment and has the potential of passing through the food chain.

The study objectives were to establish the presence of lead in free range reared poultry eggs in Huruma and Langas estates of Eldoret municipality. To perform a risk analysis on consuming lead contaminated free-range poultry eggs in Huruma and Langas estates of Eldoret municipality.

The study design was a cross-sectional survey where questionnaires were administered to determine the egg consumption patterns and quantitative analysis of lead content in the sampled eggs was done. A representative sample of 150 eggs from indigenous poultry were collected and analyzed.

The eggs were broken and separated into yolk and albumen then wet-digested and their lead content determined using the Atomic Absorption Spectrometer (AAS). Data was analyzed using the Statistical Package for Social Sciences (SPSS). Univariate analysis for mean, standard deviation, frequencies range and Pearson χ^2 was done. Data was represented using tables, charts and graphs.

The concentration of lead in poultry egg (yolk and albumen) was: 0.4075mg/kg and 0.0041mg/kg respectively. The poultry lead level in the yolk exceeded the permissible level of 0.1mg/kg. The findings showed a significant difference in lead levels between the yolk and albumen $p= 0.00$. There was no significant difference in lead levels between the poultry egg from Huruma and Langas $p=0.055$. The estimated weekly lead intake in the population was 7.334 μ g/kg bw/week, which was less than the provisional tolerable weekly intake.

Lead contamination of poultry egg yolk presented was high and this was a potential human health risk. However, consumers were unlikely to experience any toxicological effects from this exposure because their egg consumption rate was low. Further research on analysis of soil, water and poultry forage for lead levels to correlate the finding with poultry egg lead level raised in this environment is equally important.