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IMPACT OF HEAVY METALS ON SAFETY OF CATTLE MEAT SOLD IN OWERRI METROPOLIS, IMO STATE, NIGERIA

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Abstract

The concentrations of Copper (Cu), cadmium (Cd), manganese (Mn) and lead (Pb) in liver, kidneys and red meat of cattle slaughtered in selected abattoirs in Owerri metropolis, Nigeria were studied using atomic absorption spectroscopy (AAS). This was done in relation to their concentrations in a forage grass, *Panicum maximum* randomly harvested from roadsides of Owerri-Onitsha and Owerri-Aba Highways. Results obtained showed that cattle meat samples contained all heavy metals studied. Their mean concentrations (mg/kg ± standard deviation) were 0.040 ± 0.018, 0.039 ± 0.031 and 0.044 ± 0.048 for Pb; 0.0088 ± 0.005, 0.0078 ± 0.0058 and 0.010 ± 0.011 for Cd; 0.013 ± 0.008, 0.013 ± 0.008 and 0.011 ± 0.006 for Cu; and 0.020 ± 0.008, 0.020 ± 0.017 and 0.015 ± 0.007 for Mn, in red meat, liver and kidneys. The general order of concentrations observed was Pb>Mn>Cu>Cd. Their concentrations in various organs of cattle were in the order kidneys>liver>red meat for Pb and Cd but Liver>kidneys>red meat for Cu and Mn. These were far below the World Health Organization/Food and Agricultural Organization/European Commission maximum permissible/allowable limits (MPLs) for the heavy metals. The concentrations in *Panicum maximum* were in the order Pb>Cu>Mn>Cd in samples collected from Owerri-Aba expressway, while it was Mn>Cu>Pb>Cd in samples from Owerri-Onitsha expressway. The order of estimated daily intake (EDI) for meat samples was Pb>Mn>Cu>Cd and well below the tolerable daily intake (TDI). Statistical analysis showed that there was no correlation between the concentrations of these heavy metals in meat and plant samples.

Key words: cattle meat, heavy metal, liver, red meat, safety

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