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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 performed in relation to their concentrations in a forage grass, *Panicum maximum* randomly harvested from roadsides of Owerri-Onitsha and Owerri-Aba expressways. Results obtained showed that cattle meat samples contained all heavy metals studied. Their mean concentrations (mg/kg  $\pm$  standard deviation) were  $0.040 \pm 0.018$ ,  $0.039 \pm 0.031$  and  $0.044 \pm 0.048$  for Pb;  $0.0088 \pm 0.005$ ,  $0.0078 \pm 0.0058$  and  $0.010 \pm 0.011$  for Cd;  $0.013 \pm 0.008$ ,  $0.013 \pm 0.008$  and  $0.011 \pm 0.006$  for Cu; and  $0.020 \pm 0.008$ ,  $0.020 \pm 0.017$  and  $0.015 \pm 0.007$  for Mn, in red meat, liver and kidneys respectively. 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 and 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 in samples from Owerri-Onitsha expressway, the order was Mn>Cu>Pb>Cd. The order of estimated daily intake (EDI) for meat samples was Pb>Mn>Cu>Cd, being 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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