Elemental Determination

Rat tissues (liver, kidney, heart, spleen, lung, and brain) and whole blood were digested in nitric and sulphuric acid mixture and analysed by inductively-coupled plasma mass spectrometry (ICP-MS). The result showed that mercury accumulated in all the organs but more mercury uptakes were observed in the kidney than every other tissues, markedly in females (77.89±7.7 and 23.78±1.59 µgHg/g). The exposure resulted in decrease in Mg, Ca, Fe, and Zn in nearly all the tissues except for brain and liver where Fe increased significantly in both sexes compared to controls(p<0.05). Se behaved differently in kidney and blood, in terms of its mutual competition with Hg. The increase in Hg dose resulted in gradual and significant increase in the concentration of Se in kidney and blood. There was also significant increase in Ca and Mg in lungs of both sexes. No variation was observed with zinc in brain and liver. Most notably, Hg correlated negatively with Ca and Mg. These findings indicate interaction between essential and toxic metals.

CONCLUSION

The findings of this study indicate that sub-chronic exposure to inorganic mercury is associated with decreased calcium and magnesium. This may lead to disruption in the homeostasis of essential metals.

REFERENCES