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## Protective effects of *Lippia javanica* herbal tea on lead-induced oxidative brain damage in adolescent rats

Constance R Sewani-Rusike

Walter Sisulu University, South Africa

Lead (Pb) toxicity is known to induce oxidative stress and cause damage to multiple organs, especially the still developing brain. *Lippia javanica* is a herbal tea that is consumed in rural Eastern Cape of South Africa as a tea as well as being used medicinally for a variety of ailments. We have shown high *in vitro* antioxidant capacity of the herbal tea. The aim of this study was to investigate the effects of a 5% *L. javanica* infusion on Pb-induced brain damage in adolescent rats. Male Wistar rats (n=5/group) treatment groups were: control (1ml distilled water); PbCl<sub>2</sub> (50mg/kg bw); PbCl<sub>2</sub> (50mg/kg bw) + *L. javanica* (5ml/kg bw) and *L. javanica* only (5ml/kg bw). Treatment was over 6 weeks. Brain non-enzymatic and enzymatic antioxidant levels, lipid peroxidation, acetylcholinesterase activity, brain TNF- $\alpha$  levels, pro-apoptosis protein bax expression and histology were assessed. Pb exposure resulted in increased superoxide dismutase activity, lipid peroxidation, acetylcholinesterase activity, TNF- $\alpha$  levels and increased expression of bax protein in rat brain – effects that were reversed by the treatment with *L. javanica*. Histologically, Pb exposure caused severe vacuolization and oedema in hippocampal cells which was improved with *L. javanica*. The study demonstrated that *L. javanica* was effective in reducing brain oxidative stress, lipid peroxidation and neuronal damage and may be effective in preventing the onset of oxidative stress-induced neurodegenerative diseases.

### Biography

C.R. Sewani-Rusike completed her Ph.D. studies at Michigan State University (East Lansing, USA) after which she studied Medicine at the University of Zimbabwe. Her primary research interests are in oxidative stress-related pathologies such as those induced in the reproductive, nervous and endocrine systems by environmental toxicants and diseases of lifestyle. Her specific focus is on investigating the effects of indigenous plant foods and medicinal plants on these oxidative stress-related pathologies.

consewa@hotmail.com

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