conferenceseries.com

Vanda Maria Falcão Espada Lopes de Andrade, J Clin Toxicol 2016, 6:6(Suppl)
http://dx.doi.org/10.4172/2161-0495.C1.022

Contribution of cholinergic and dopaminergic disarrays to motor activity changes induced by exposure to a mixture of metals

Vanda Maria Falcão Espada Lopes de Andrade
Universidade de Lisboa, Portugal

Lead (Pb) and arsenic (As) and manganese (Mn) are ubiquitous neurotoxic metals/metalloids present as mixtures in environmental settings. Nucleus accumbens is preferentially susceptible to Pb, while As accumulates mainly in the pituitary and Mn in the striatum. Cholinergic (Ch) and dopaminergic (DA) outputs to these areas are important to brain functions such as motor activity (MA). Competition among metals within a mixture may occur *in vivo* modifying the mechanisms through which toxicity is exerted. These work aimed to asses if the exposure to a Pb/As/Mn mixture would change the contribution of Ch and DA disarrays to MA toxicity. Wistar rats were exposed to Pb, As or Mn and its mixture. MA was evaluated; serum and brains were obtained; brain metal levels were determined; Ch function was assessed through brain acetylcholinesterase (AChE-Br) activity and DA functions through serum prolactin (PRL-S) levels. Factor analyses (FA) allowed to group similar variables and evaluate AChE-Br and PRL-S proximity to MA parameters. The metal mixture induced decreased MA and higher Pb accumulation in brain, compared with all the other groups. FA showed that in Pb treated rats PRL-S was the parameter closer to MA counts, while AChE-Br and PRL-S were similarly distant to MA upon exposure to As; AChE-Br activity exhibited the lower distance to MA in Mn- and mixture-treated groups. DA modifications seem to trigger Pb-induced MA changes more than Ch. In mixture exposures, Ch pathways sensitivity to the conjunct action of Pb/As/Mn appears to overwhelm DA effects of Pb higher accumulation in brain.

Biography

Vanda Maria Falcão Espada Lopes de Andrade graduated in Biology in 1992 and obtained a Master's degree in Animal Biodiversity Conservation in 1998, both from Faculdade de Ciências da Universidade de Lisboa. She has completed her PhD in Pharmacy/Toxicology from Faculdade de Farmácia da Universidade de Lisboa, Portugal in 2014. She is Assistant Professor in Escola Superior Agrária de Santarém, Instituto Politécnico de Santarém since 2013, where she coordinates the curricular units of Toxicology since 2014; and since 2015, Pollution and Ecotoxicology. She published 9 papers in international journals, performed 15 communications (4 oral presentations and 11 poster presentations) and 8 seminars.

vandaandrade70@gmail.com

Notes: