

Original Article

Determination of selected trace elements in the cerebrum of rat pups (*rattus norvegicus*) following prenatal ethanol gavage

Ibrahim A. Iliya, Tanko Murdakai, Stephen Akpulu, Samuel O. Mayaki, Sekina Sambo, Akinyemi A. Omoniyi

Of all the potential substances of abuse, ethanol (alcohol) is one of the most readily available. Most adults regularly or occasionally consume it. The most tragic effect of ethanol is on the central nervous system particularly during pregnancy. To assess this effect 6 pregnantly-timed dams divided into 3 groups were ingested with experimental equivalent concentrations of ethanol: low (8% v/v), medium (15% v/v) and high (45% v/v) via oro-gastric intubation procedure. A separate group was fed distilled water via same route. Administration of ethanol was done in the 2nd and 3rd trimesters of the rat gestational period. After natural delivery, cerebral tissues were obtained by dissection after a light anaesthesia followed by decapitation. The samples were analyzed for trace elements via an Instrumental Neutron Activation Analysis method (INAA) with the aid of a Nigerian Nuclear Research Reactor (NNRR-1). One way ANOVA was used to analyze the results at $p < 0.05$. Game Howell and Tukey HSD post-hoc tests were used to check for the difference. Ca, Cu, Fe, Rb, Se, Zn, Na, Al and K were detected and quantified accordingly. Mean relative tissue concentrations for Cu, Rb, Zn, K and Al trace elements showed changes that were statistically significant at $p < 0.05$ when compared to the normal control. No significant difference was found for Na, Fe, Se and Ca. Results from this study showed the teratogenic potential of ethanol on the developing cerebrum.

Keywords: Trace elements, Instrumental neutron activation analysis, Cerebrum, Ethanol
