

Evaluation of the effects of experimental PCB toxication on oxidative and antioxidative status in central nervous systems tissues and the protective effect of curcumin

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Abstract

In this study, we evaluated the effect of prenatal PCB toxication on oxidant and antioxidant status in the central nervous system (CNS) tissues and the protective effect of curcumin. Animals were divided into a control group and 2 experimental groups. Group 1 (n=10) was considered as a control group. In group 2 (n=10), we exposed the pregnant rats to PCB mixture. In group 3, (n=10) we exposed pregnant rat to PCB mixture and curcumin. We measured plasma neuron specific enolase (NSE) concentrations in all pups. We also measured total antioxidant status (TAS) level and total oxidant status (TOS) level in the tissue (brain, cerebellum, pons and medulla oblongata) homogenisats of CNS. In this study, the TOS level was found higher in brain and cerebellum in group 2 and 3 than control group. However, we did not find any change in TOS and TAS level in medulla oblongata and pons in group 2 and 3. The concentration of NSE was higher in group 2 than control group. We also found that the use of curcumin had not any effect on the TOS and TAS concentrations. In conclusion; the main effected part of the central nervous systems are brain and cerebellum in terms of TOS concentrations. We did not find any effect of curcumin to increase TAS concentrations and decrease the concentration of TOS in brain and cerebellum. Additionally, NSE can be used as a useful biomarker to determine the damages found in the CNS in case of prenatal PCB toxication..

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