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Effect of High Dose of Black Tea Extract on Physiological Parameters of Mother and Pups in Experimental Albino Rats

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Abstract : Tea (Camellia sinensis) is the most popular beverages in the world and is ranked second after the water. Tea has been considered as a health promoting beverage since ancient times due to its health-promoting activity. Recently, immunomodulatory, anti-arthritic, antioxidant, anticancer and cardioprotective activity of tea has been established. Very few studies have demonstrated the effect of high dose of black tea on health. The aim of the present study was to evaluate the role of low & high dose of Black Tea Extract (BTE) on the different physiological parameters of mother and pups during prenatal and postnatal developmental period in the experimental rodent. BTE was orally administered in LD (50mg BTE/kg/day) and HD (100mg BTE/kg/day) except control groups of rats (n=6/group) throughout the prenatal (day 0-21) and postnatal (day 21-42) periods. During prenatal period (0, 7th, 14th, 20th days) body weight, urinary calcium, magnesium, urea and creatinine was measured. In postnatal period physical (0, 10th, 21th days) parameters of pups like body weight, cranial length, cranial diameter, neck width, tail length, craniosacral length of pups were analyzed. Liver and lungs from pups and kidney spleen, etc. from mothers were collected on day 42 for histopathological studies. The comparative urine strip and morphology of RBC was also analyzed by SEM from mothers of different groups on day 42. The level of cytokines like IL-1alpha, IL-1beta, IL-6, IL-10, TNF-alpha were analysed by enzyme-linked immunosorbent assay (ELISA) on day 0, day 20 and day 42. The body weight of LD and HD mothers were also significantly ($P<0.05$) less than control mothers at 20th day of pregnancy and there was also significant changes in urinary calcium, urea, creatinine. The bio morphometric analysis of pups showed significant alteration ($P<0.05$) in HD groups relative to control. Some histological alterations were also observed in pups and mothers. Comparative urine strip analysis and morphology of RBC showed significant changes in treated groups. LD and HD treated mothers showed an increase in proinflammatory cytokines like IL-1beta, TNF-alpha and decrease in anti-inflammatory cytokine-like IL-10 on day 20 compared to PC mothers. This study clearly indicated that high dose of BTE possesses detrimental effect on pregnant mother and the pup. Further studies are in progress to elucidate the molecular mechanism of actions. This project work has been sponsored by National Tea Research Foundation vide Project Sanction No.: 17 (305)/2013/4423 dated 11th March, 2014. All experimental protocols described in the study were approved by animal ethics committee.

Keywords : black tea extract, pregnancy, prenatal and postnatal development, inflammation
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