

## Original Paper

# Effect of carbamazepine on homocysteine serum level in pregnant mice and fetal malformations outcome

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## Abstract

**Background and Objective:** Carbamazepine during pregnancy can induce various malformations. Recent studies have showed an increase in homocysteine level due to Carbamazepine administration. This study was to evaluate the effect of Carbamazepine on homocysteine serum level in pregnant mice and fetal malformations outcome.

**Materials and Methods:** In this experimental study, 40 BALB/c timed-pregnant mice were allocated into 2 experimental and 2 control groups. The experimental groups were received daily intraperitoneal injections of 30 mg/kg (group I) or 60 mg/kg (group II) of Carbamazepine on gestational days 6 to 15. The control groups were received either - normal saline or Tween 20. Dams underwent Cesarean section on GD 18. External examinations were done and all data concerning malformations, weight and crown-rump of fetuses collected. Blood samples were collected from Dams' hearts prior to performing the Cesarean section. Homocysteine was measured using ELISA method. Data were analyzed using SPSS-18, ANOVA, Chi-Square and Tukey tests.

**Results:** Significant increase in Homocysteine levels of dams' serum compared to control groups was seen in both experimental groups I and II ( $10.56 \pm 1.31$  and  $11.11 \pm 1.64$   $\mu\text{mol/L}$ , respectively,  $P < 0.05$ ). The mean weight and crown-rump of the fetuses in both experimental groups were significantly reduced compared with those of the control groups ( $P < 0.05$ ). Various malformations such as limb defects, vertebral defects, facial deformity and severe malformations were observed in fetuses of both experimental groups.

**Conclusion:** Serum elevation of homocysteine in Carbamazepine exposed pregnant mice may be a risk factor for induction of fetal malformations.

**Keywords:** Carbamazepine, Fetal malformations, Homocysteine, Mice

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