

## **Effects of Topiramate Administration on Placenta of Rat**

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**Background:** Topiramate was classified as pregnancy category D, which means that it possesses a potential risk to the fetus. An increasing evidence points to the risk of development of cleft lip and/or cleft palate (oral clefts) in infants born due to Topamax (topiramate) during pregnancy.

**Objective:** To evaluate the effects of the therapeutic doses of topiramate on the placental structure.

**Design:** An Experimental Animal Study.

**Setting:** Teratology Laboratory, Anatomy Department, CMMS, Arabian Gulf University.

**Method:** Pregnant rats were treated with oral topiramate at doses of 50 and 100mg/Kg body weight. On day 20, the pregnant rats were sacrificed, and the placentae were collected and processed for histological evaluation.

**Result:** Degenerative changes in all three layers of the placenta (decidual, basal and labyrinthine) were observed. In the decidual layer, deposition of fibrous and hyaline materials were found in the cells, in addition to vacuolization and hemorrhages. In the basal layer, the trophoblast cells (giant, basophilic and glycogen cells) showed vacuolization, cytolysis and cyst formation. In the labyrinthine layer, there was an increased fibrinoid material and fetal mesenchyme. In addition, degeneration of cells and congestion of blood vessels were evident.

**Conclusion:** The deleterious effects of the therapeutic doses of topiramate on the placental structure may play a role in its teratogenicity. These placental changes are not dose dependent.