Teratology is the study of congenital abnormality which could be abnormal structure, function, growth retardation and even death. Artesunate, an antimalarial drug, has been reported to cause irreversible brain damage in experimental rats, and other toxic effect like haemolysis and neutropenia. This study was conducted to investigate the teratogenic effect of the antimalarial agent artesunate (ARTS) on the developing olfactory bulb of Wistar rats following maternal oral administration. A total of 16 virgin female and 8 male Wistar rats weighing 150g was used for this study. The estrous cycle of the female rats were determined and at the proestrous phase they were allowed to mate with the male overnight. Pregnant rats were administered ARTS daily from gestational day 8~12 via oral gavage, at test doses of 0, 2, 4, or 8 mg/kg (4 females per group). After lithering by the Dams, the Pups were decapitated and the olfactory bulb was carefully removed from the frontal lobe of the cerebrum using forceps and used for histological studies. Histological examination of olfactory bulb of the pups using Haematoxylin and Eosin (H&E) and Cresyl Violet stain for nuclei of neurons, shows nuclear lesions, vacuolation and cell membrane disruption, that are indicative of a pathological expression of a chemical injury. The lesion is more pronounced in the 8mg/kg group than in the 2mg/kg group. The effect of artesunate was dose dependent as the histology of the olfactory bulb showed changes that range from blurring of nuclear outline, swelling of cells, vacuolation and cell membrane disruption, with the no-observable-adverse-effect level (NOAEL) at 2 mg/kg/day for embryo-fetal development. This study showed that oral administration of artesunate causes histological changes in the olfactory bulb of litters of pregnant Wistar rat exposed to high dose of the drug.

Keywords: Artesunate, olfactory bulb, teratogen, teratology

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