



## Effect of acute exposure to ethanol on distribution of NR1 subunit of NMDA receptor of glutamate in cerebral cortex of chick embryo

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### Abstract

**Introduction:** There is considerable evidence that glutamate-mediated excitatory neurotransmission plays an important role in mediating the behavioral actions of acutely administered ethanol. The aim of the present study was to investigate the effect of acute ethanol exposure on NR1 subunit of NMDA (n-methyl-d-aspartate) receptor distribution in the cerebral cortex of chick embryo on the 10<sup>th</sup> and 15<sup>th</sup> day of egg incubation.

**Methods:** Forty fertilized eggs were divided in two groups; control and ethanol (70% ethanol). In both groups, on the 10<sup>th</sup> and 15<sup>th</sup> days of embryonic stage, brain coronal sections were prepared for determination of distribution of NMDA receptor NR1 subunit by immunohistochemical method. Image analyzer software was used for color analysis.

**Results:** Immunohistological findings of these experiments indicated that acute exposure to ethanol significantly decreased the density of NMDA receptors NR1 subunits in chick brain on the 10<sup>th</sup> and 15<sup>th</sup> day of the embryonic stage. Also, the ratio of the number of NMDA receptor NR1 subunit to immunoreactive cells were significantly decreased in acute ethanol groups.

**Conclusion:** Our results indicated that acute exposure to ethanol decrease NR1 receptor distribution and the ratio of the number of NMDA receptor NR1 subunit to immunoreactive cells in the brain of chick embryo on the 10<sup>th</sup> and 15<sup>th</sup> day of embryonic stage.

**Key words:** Acute Ethanol, NR1 Receptor, Chick Embryo

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