Effects of taurine supplementation on the expression of taurine, $GABA_{A\alpha}$ and NMDA receptors of astrocyte cell under ethanol treatment.

Hui-Ting Yang[1] and Shih-Yi Huang[2*]
[1]School of Pharmacy, [2]School of Nutrition and Health Sciences, Taipei Medical University, Taipei, 110, Taiwan,
sihuang@tmu.edu.tw

The present study was to examine the effects of taurine on immortal astrocyte cell line (*CTX* TNA_2) after subsequently high content alcohol incubation. The cells were firstly incubated with medium which contained 0 or 200 μM ethanol for successive four days and the medium was changed daily. In the day 5, the incubation medium was changed to alcohol free medium and different amounts of taurine (0, 50, 100, 200 μM) were added in the medium. Immunocyto-chemistry of taurine, gamma-aminobutyric acid subunit $_{A\alpha}$ ($GABA_{A\alpha}$) and N-methyl-D-aspartate (NMDA) receptors were analyzed daily by confocal microscope and were examined the protecting effects of taurine under ethanol incubation. Results showed that after 4 days of ethanol treatment, astrocytes shrinked to slender shapes and NMDA receptors were less expressed than controls. Furthermore, ethanol highly expressed $GABA_{A\alpha}$ receptors expression and accelerated the taurine utilization in the day 4. However, 100 μM of taurine supplementation and upward can improved the impact brought by ethanol incubation (in the Day 7). The study demonstrated ascertained the effectiveness of taurine on successively alcohol treatment. The possible explanation might due to the taurine recovered glutamatergic neurotransmission which ethanol interrupted. However, it is necessary to clarify the role of taurine on alcohol utilization in further study.