

Effect of α -galactosylceramide as Brain Immune Modulatory in Post-weaning Social Isolation

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Background

Schizophrenia is a severe mental disorder characterized by breakdown of thinking process and a deficit of typical emotional responses. More recent attempts to demonstrate connections between schizophrenia and social isolation (SI) during early postnatal life. In both disorder T helper lymphocytes was loss the immune balance. The potent exogenous ligand of natural killer T cells (NKT) cells is α -galactosylceramide (α -GalCer) that can produce both T helper (Th) lymphocytes : Th1- (IFN γ) and Th2-type (IL-4, IL-10) cytokines. In this present study, we demonstrated immunomodulatory role of α -GalCer on brain cytokines of SI rats.

Method

Four groups of male Wistar rats were reared post weaning in social or isolated conditions for 8 weeks. After First week of weaning, α -GalCer or normal saline delivered IP every week until last week. After the last weeks, all rats were decapitated and the brains removed. Rat brain was homogenized and lysed. The levels of IFN- γ and IL-4 were determined in brain supernatant using sandwich-base ELISA kit.

Results

α -GalCer indicate significantly increased IFN- γ expression ($p < 0.001$) also in α -GalCer-treated rats, level of IL4 reduced significantly than the social isolated condition ($p < 0.0001$).

Conclusion

These data suggest that levels of IFN- γ and IL-4 were regulated differently depending on the physiological circumstance. In this regard Th1 and Th2 imbalance occurred on SI condition. Moreover, α -GalCer indicated modulation between levels of IFN- γ and IL-4 in post-weaning SI.