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Poster Sessions

Social cognitive improvement via activation of the hippocampal $\alpha 7$ nicotinic acetylcholine receptor in stressed mice

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[Purpose] Social cognition is a key factor of rehabilitation in stress-related disorders. The $\alpha 7$ nicotinic acetylcholine receptor (nAChR) is a promising target for the treatment of cognitive deficits associated with psychiatric and neurological disorders. In this study, we investigated the involvement of $\alpha 7$ nAChR in the social cognition of stressed mice.

[Methods] The male C57BL/6J mice at age of 7 weeks were exposed to swimming stress for 15 min. Administration of PHA568487 (PHA: 0.3 mg/kg i.p.), an $\alpha 7$ nAChR agonist was commenced once a day for 7 consecutive days from the next day of stress exposure.

[Results] The stressed mice showed the impairment of social cognition in the three-chamber social interaction test, the decreased expression of $\alpha 7$ nAChR subunit protein and the ratio of Akt, CaMK II, and ERK phosphorylation in the hippocampus (HIP). These abnormalities were attenuated by repeated treatment with PHA.

[Conclusions] Our findings indicated that stress exposure impaired the social cognition via decreasing $\alpha 7$ nAChR-related intracellular signaling in the HIP. Since repeated treatment with PHA attenuated these behavioral and neurochemical changes, $\alpha 7$ nAChR may be one of the new therapeutic targets for the impairment of social cognition in stress-related disorders.