

Yokukansan and keishito ameliorate ASD-like sociability deficits in ovariectomized mice

Linyu Li¹, Kinzo Matsumoto¹, Ryota Araki², Takeshi Yabe², Fujiwara Hironori^{1,3}

¹Div. Med. Pharm., Inst. Nat. Med., Univ. of Toyama, ²Lab. Func. Biomol. Chem. Pharmacol., Fac. Pharm. Sci., Setsunan Univ., ³Fac. Pharm., Iryo Sosei Univ.

Autism spectrum disorder (ASD) is a neurodevelopmental disorder with core symptoms of sociability deficit. We focus on allopregnanolone (ALLO) which is a neurosteroidal positive modulator of the GABA_A receptor. Our previous findings showed that post-weaning social isolation rearing (SI) of male mice induces ASD-like sociability deficits, and these abnormalities are in part due to SI-induced decreases in ALLO contents in the brain. It is also demonstrated that yokukansan (YKS) and keishito (KST), traditional herbal medicines, improved sociability deficits in SI mice. Moreover, we reported that dissection of ovary (OVX) of female mice also induced ASD-like sociability deficits. This study investigated the effects of YKS and KST on the ASD-like behavioral abnormalities of OVX mice. The ovariectomy was conducted on 6-week-old mice. The administration of YKS and KST was started 1 week after surgical operation. After finishing behavioral tests, the ALLO contents in cortex were measured by ELISA. YKS and KST improved the ASD-like sociability deficits induced by OVX without restoring brain ALLO levels, similar to the results of SI mice. These results suggest that YKS and KST are effective for ASD treatment. Currently, we are analyzing the mechanism of YKS and KST for improving sociability deficits.