Effect of Nyoshinsan on decreased voluntary activity of OVX mice

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Nyoshinsan is one of the kampo medicine used in the treatment for menopausal disorder. We have already reported that ovariectomized (OVX) rats were seen in the decreases of voluntary activity at the dark time and serotonin level in amygdala (Behav. Brain. Res. 227(1)1-6(2012)). In this study, we examined effects of Nyosihnsan on a voluntary activity in OVX mice. The female ICR mice of 9-week old were OVX or sham operation. Either Nyoshinsan (750 mg/kg/day, p.o.) or water were administered to each group for 8 weeks (6 times/week) starting from 8 weeks after OVX. The voluntary activity of mice was evaluated by using an activity sensor (model NS-AS01 neuroscience, Inc.) at dark time (19:00-7:00). Moreover, RNA expression level of tryptophan hydroxylase (TPH) was measured in hippocampus and prefrontal cortex by Real-time PCR. In the result, Nyoshinsan significantly prevented decreased voluntary activity at dark periods induced by OVX. In addition Nyoshinsan suppressed down-regulation of TPH mRNA expression level induced by OVX. These results revealed that these OVX induced despair-like behaviors were improved by administration of Nyoshinsan. Moreover, it was also thought that the voluntary activity mediated by serotonin level in hippocampus.