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Chronic treatment with fluoxetine and sertraline prevents forced swimming test-induced hypercontractility of rat detrusor muscle

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Abstract:
Serotonin (5-hydroxytryptamine, 5-HT) reuptake inhibitors represent important targets for the development of new treatments for detrusor overactivity and urinary incontinence. The present study was undertaken to investigate the effects of the forced swimming test (FST) on the contractile response of isolated rat detrusor muscle and to examine the effects of *in vivo* treatments of fluoxetine and sertraline on altered detrusor muscle contractility. Fluoxetine (20 mg/kg *ip*) and sertraline (10 mg/kg *ip*) were administered once a day for 14 days. Rats were exposed to the FST on the 15th day. After the test, detrusor muscles were removed and placed in organ baths, and the contraction responses induced by carbachol, potassium chloride (KCl) and electrical field stimulation (EFS) were recorded. The contractile responses of detrusor muscle strips to carbachol and electrical field stimulation were found to be increased at all carbachol doses and frequencies, respectively. FST also increased the contractile responses to KCl, which is used to test the differences in postreceptor-mediated contractions. The hypercontractile responses of detrusor strips to carbachol, EFS and KCl were abolished by treatment with both fluoxetine and sertraline. These treatments also decreased the immobility duration in the FST consistent with an antidepressant-like effect in this test. The results of this study provide the first evidence that FST increases contractility of the rat detrusor muscle, and this hypercontractility was abolished by chronic treatments of fluoxetine and sertraline at antidepressant doses by decreasing the postreceptor-mediated events.

Key words:
fluoxetine, sertraline, forced swimming test, depression, detrusor