

# The effects of PDE-5 inhibitors on voiding function in ovariectomized rats

Tomoya Kataoka<sup>1</sup>, Seo Young Hyeon<sup>1</sup>, Park Chae Young<sup>1</sup>,

Yuji Hotta<sup>2</sup>, Yoko Hibi-Furukawa<sup>2</sup>, Kazunori Kimura<sup>2</sup>

1) Chiba Institute of Science, Japan 2) Nagoya City University, Japan



## INTRODUCTIONS

Overactive bladder (OAB), whose essential symptom is urinary urgency, is a typical lower urinary tract symptom that plagues many people. OAB significantly reduce quality of life (QOL). In women, the frequency increases with age.

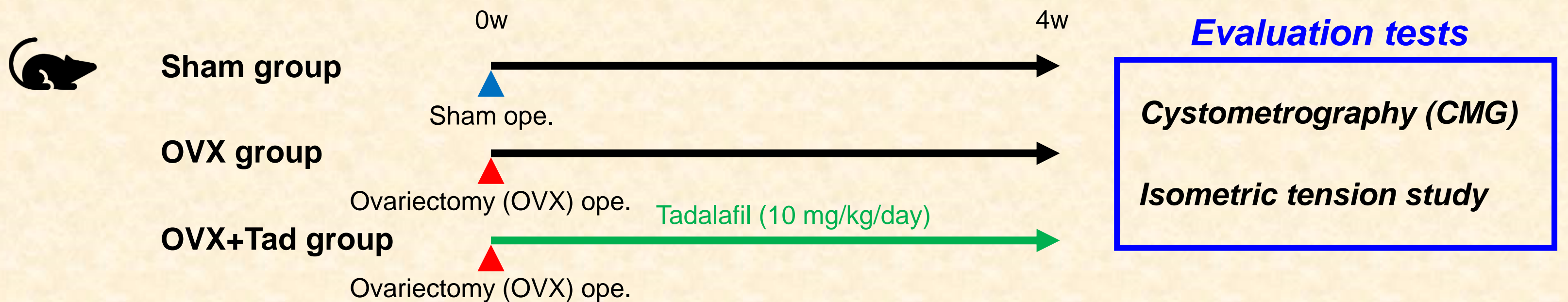
It has been reported that the incidence of overactive bladder increases with aging, and the micturition interval is shortened in ovariectomized (OVX) model rats. It has also been reported that administration of estrogen to this OVX model rat improved intercontraction intervals (ICI), but postmenopausal estrogen replacement therapy has the risk of carcinogenesis.

Anticholinergics or  $\beta$ 3-receptor blockers are the first-line drugs for treatment of overactive bladder, and combined therapy is performed when the effects are insufficient. However, further verification of efficacy and safety is required<sup>3</sup>. In female overactive bladder patients, two drugs are used, but in male overactive bladder patients, it develops with benign prostatic hyperplasia. drugs are used. Among them, PDE-5 inhibitors are thought to be effective against benign prostatic hyperplasia by increasing blood flow to the prostate, but there is also an argument that increasing blood flow to the bladder also contributes to alleviating symptoms of overactive bladder. Administration of PDE-5 inhibitors has been reported to increase bladder blood flow, and it has also been reported to increase bladder blood flow in female rats

In this study, in order to explore an effective treatment for age-related overactive bladder, we investigated the effects of a PDE-5 inhibitor, tadalafil, on voiding function in OVX model rats.

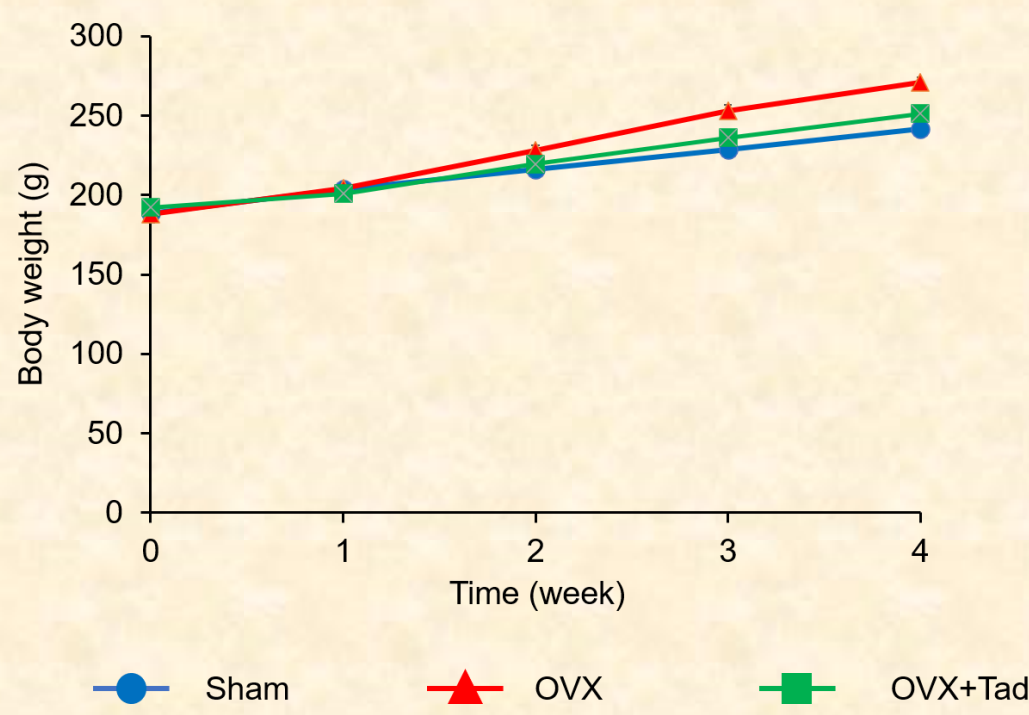
## METHODS

Animal: 8 week-old female Wistar-ST rats

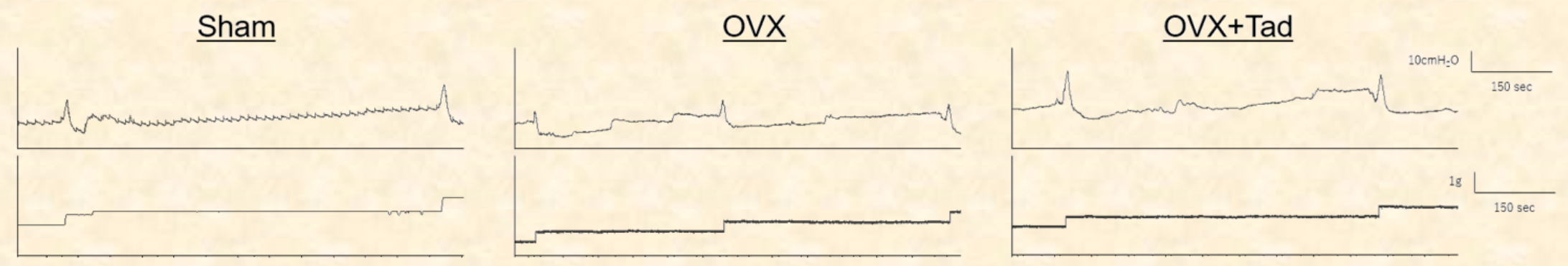


## RESULTS

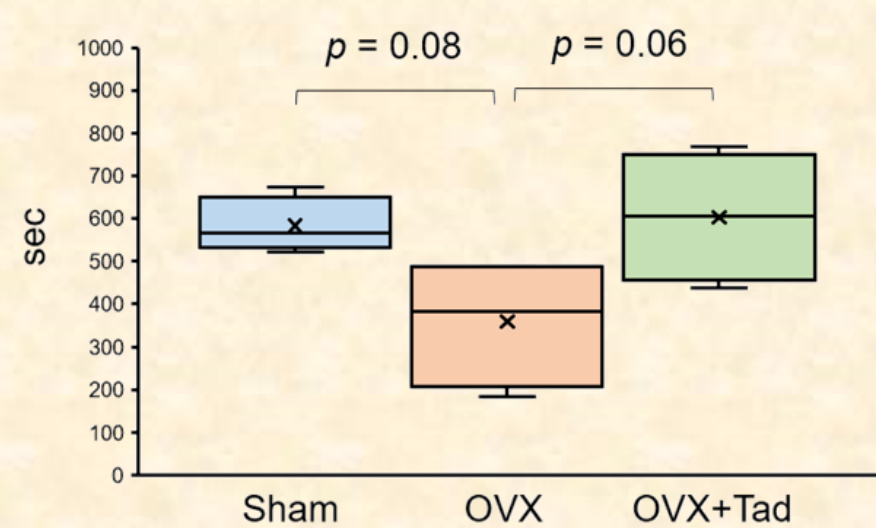
### Body weights



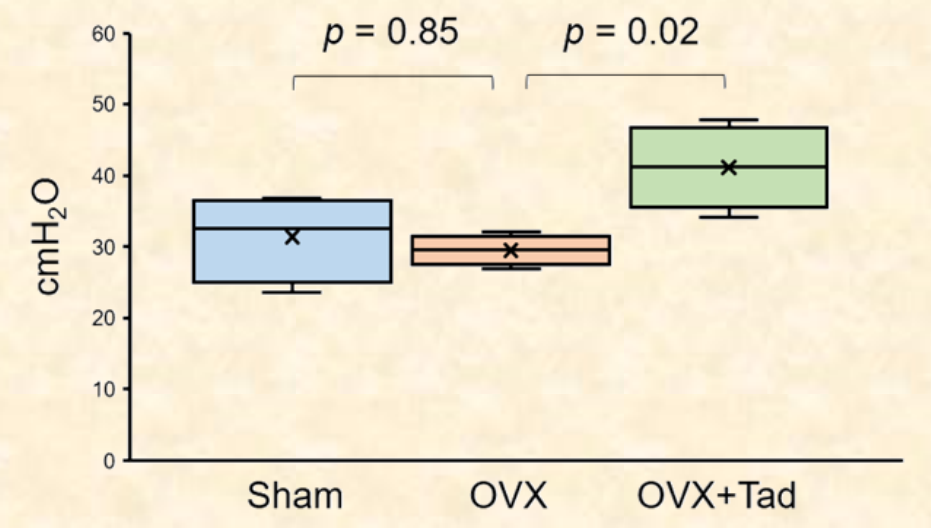
### Cystometry (CMG) analysis



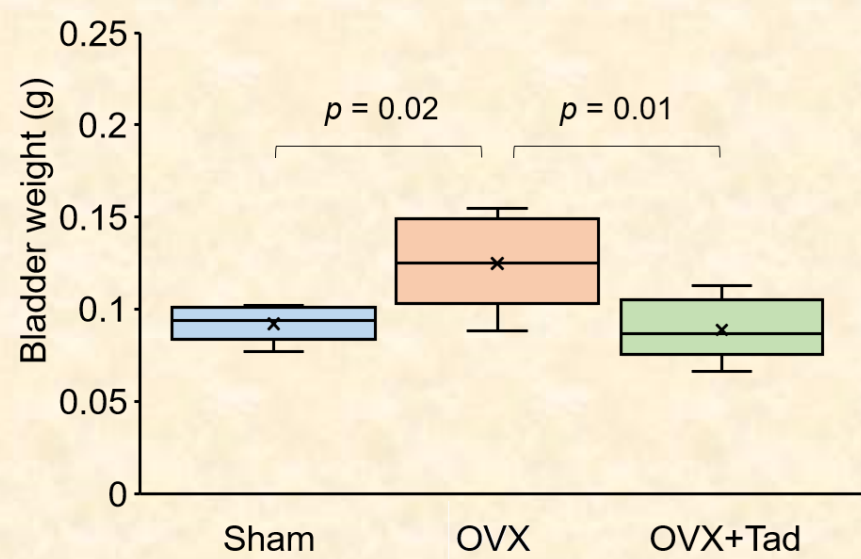
### Intercontraction intervals (ICI)



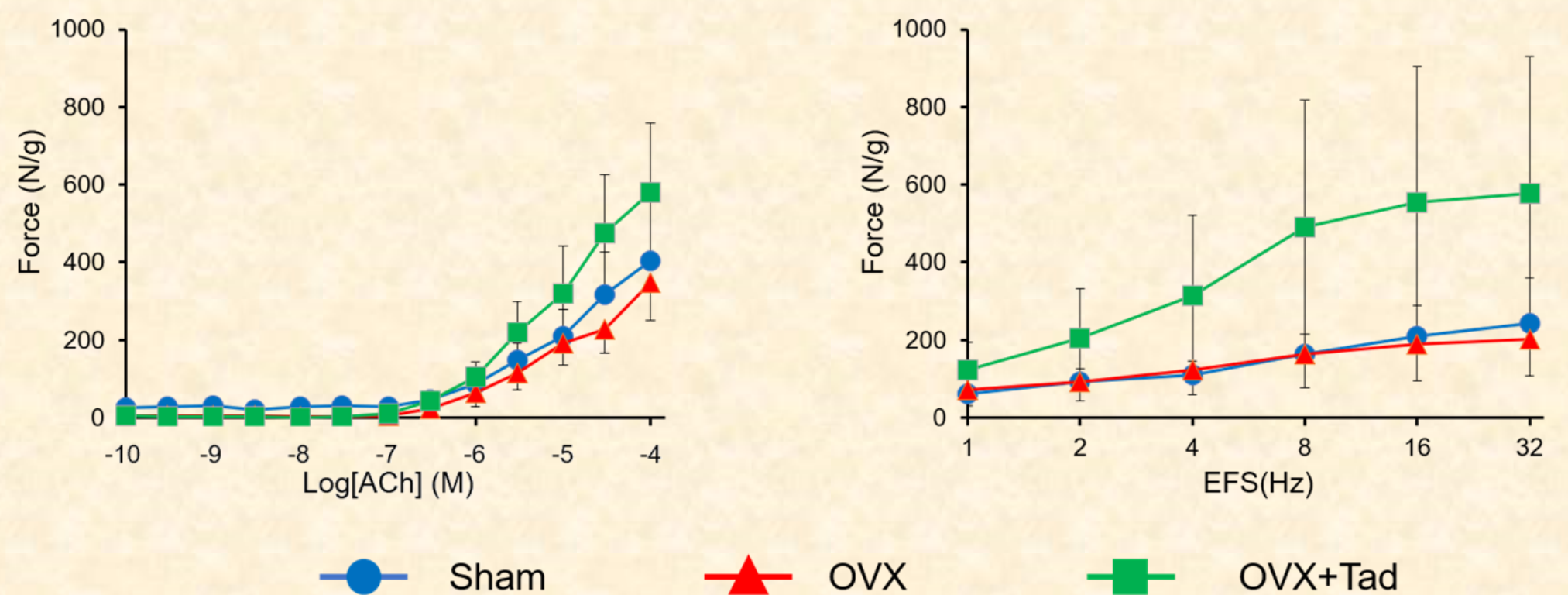
### Maximum intravesical pressure (MP)



### Bladder weights



### Isometric tension study



## CONCLUSIONS

After the OVX surgery, the ICI tended to be shortened, and she exhibited overactive bladder-like symptoms. On the other hand, the tadalafil administered rats improved the ICI to the same extent as the Sham group. On the other hand, Tadalafil administration tended to increase the maximum intravesical pressure during micturition and bladder contractility. Previous reports have reported that a decline in female hormones reduces blood flow in the bladder. On the other hand, there is also a report that administration of tadalafil increased bladder blood flow in animal study. Therefore, the present effect of tadalafil is considered to be related to bladder blood flow. In order to clarify the effect of tadalafil in the future, molecular biological measurements and histological examination are needed.