# External urethral sphincter (EUS) electromyography

## A MODEL FOR THE STUDY OF URINARY BLADDER AND URETHRAL SPHINCTER COORDINATION

### Model

Cystometry and EUS electromyography in anesthetized animals after activation of C-fibers by acetic acid infusion into the bladder.

### Specie

Guinea-pig

### Interest

- This experimental model mimics the functional changes (increase in micturition frequency and reduction in bladder capacity) observed in the urinary bladder of patients with overactive bladder. Intravesical infusion of diluted acetic acid by activating C-fibers induces the lost of the coordination between bladder and urethra. This model mimics urinary incontinence (SUI or UUI).
- This model is suitable for testing compounds for effects on decreased bladder capacity associated with increased in external urethral sphincter and the lost of bladder/urethra coordination in response to acetic acid.
- Compounds that show a positive response in this model include compounds that affect afferent nerves such as dual serotonin/norepinephrine reuptake inhibitors as well as compounds that affect smooth muscle and efferent nerves such as $K_{ATP}$ channel openers, β-adrenoceptor agonists and muscarinic antagonists.

### Model Description

- Cystometry during continuous intravesical infusion of diluted acetic acid.
- Test compounds can be administered *via* various routes (i.v., i.p., p.o., s.c. or by osmotic pumps) and cystometric parameters evaluated for up to two hours post-administration.

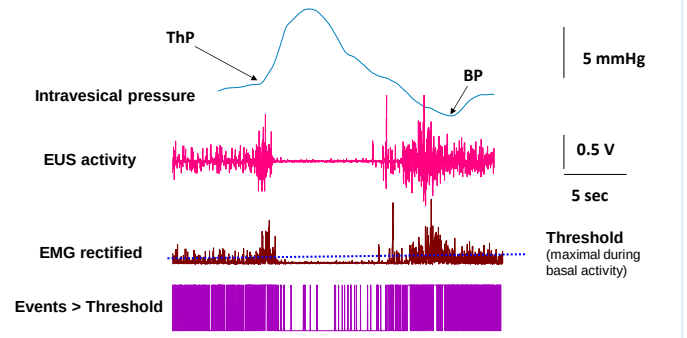
### Parameters evaluated

- Bladder capacity
- Intercontraction intervals during continuous cystometry
- Micturition pressure
- Amplitude of micturition
- Basal intravesical pressure
- Threshold pressure for micturition
- Urethral activity during filling and voiding phase

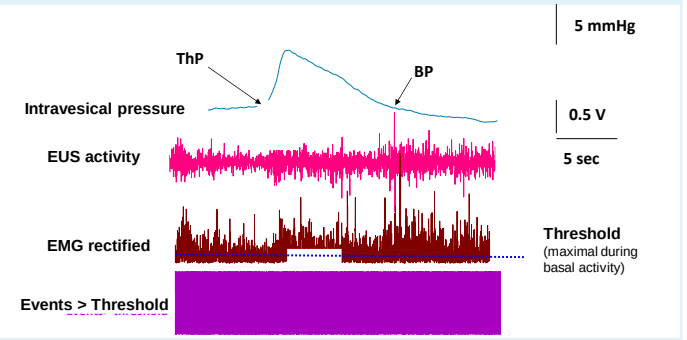
### Scientific publications


- Walters RD *et al.*, Neurourol. Urodyn. 25(1): 62-9, 2006
- Thor KB *et al.*, J. Pharmacol. Exp. Ther. 274(2): 1014-24, 1995

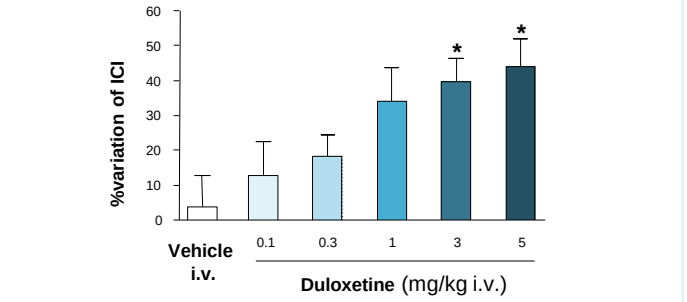

EUS activity under normal conditions



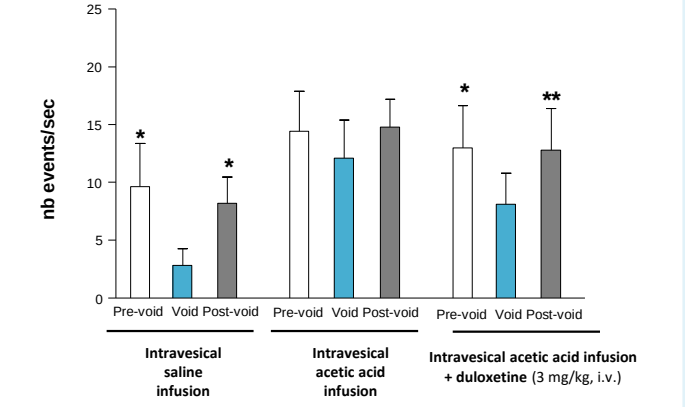

EUS activity under acetic acid conditions




Effect of duloxetine on bladder activity




Duloxetine restores bladder and urethra coordination




*P < 0.05, ** P<0.01, (n=5/group)