- In vitro investigation of human or rat corpus cavernosum function in **normal** or in **pathophysiological** conditions in organ baths.
- Unrestricted amount of tissue with animal models.
- Useful to investigate the effect of drugs developed to improve erectile dysfunction.
- Evaluation of the ability of drugs at modulating cavernosal smooth muscle tone can be performed in organ bath studies:
  - on contractions induced by pharmacological stimulation: alpha-adrenergic (phenylephrine / norepinephrine), on others relevant physiological precontracted states (endothelin-1, oxytocin…), on KCl stimulation
  - on contractions induced by electrical field stimulation (EFS) (stimulation of efferent nerve terminals presents in the tissue)
  - on nitrergic relaxation induced by EFS or pharmacological agents (nitric oxide donors)
  - on endothelium-dependent or independent relaxation
- Evaluation of mRNA by RT-PCR
- Evaluation of protein expression: by immunohistochemistry (IHC) or western-blot (WB) in parallel of organ bath studies.

## Source of CC tissues sample

- **Human corpus cavernosum samples** are obtained from patients undergoing penile surgery for penile implant as treatment of erectile dysfunction, penile congenital curvature or for Peyronie's disease.

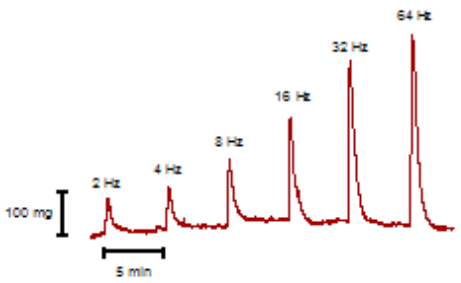


*Figure 1: Original tracing showing a frequence-response curve to EFS (300 mA, 10 s, 3 ms, 2 to 64 Hz) in human cavernosal tissue. (Pelvipharm, internal data).*

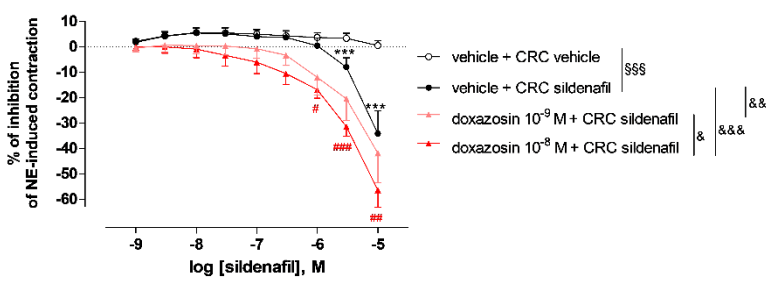


*Figure 2: Influence of doxazosin on the relaxation induce by sildenafil on norepinephrine-precontracted cavernosal strips. (From Oger et al., 2009)*

- **Rat corpus cavernosum samples** are obtained from control rats or pathophysiological rats such as GK or SHR.

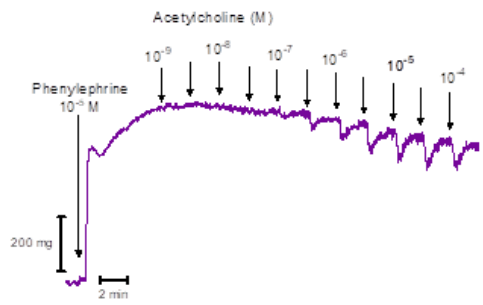


*Figure 3: Recording of CRC to acetylcholine on cavernosal strip of Wistar rat after a precontraction to phenylephrine 10-5 M. (Pelvipharm, internal data).*

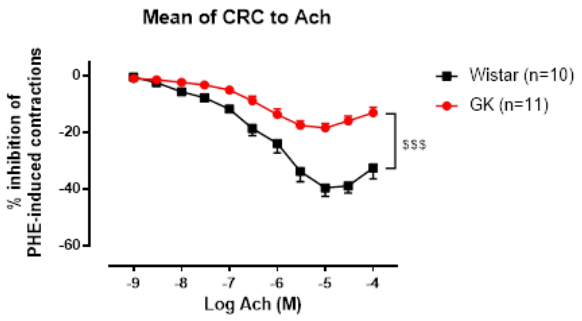


*Figure 4: Endothelium-dependent relaxant responses to acetylcholine (Ach) (10-9 to 10-4 mol/L) on phenylephrine (PHE)-pre-contracted cavernosal strips from control Wistar and GK rats. CRC = concentration response curve $$$ p<0.001 two-way ANOVA (From Assaly et al., 2018).*

## Endpoints

- Evaluation of the capacity of a drug to inhibit human or rat corpus cavernosum smooth muscle contractions.
- Determination of potency **(EC50)** and efficiency **(Emax)** of a drug.
- Determination of the affinity **(pA2)** of a drug for a human or rat corpus cavernosum receptor.

**Related Pelvipharm bibliography:**

***Human CC :***


Oger S *et al.* **J Sex Med** (2009):6(3):836-847
Oger S *et al.* **J Sex Med** (2008):5(4):935-945


***Rat CC :***


Assaly R *et al.* **J Sex Med** (2018):15(9):1224-1234
Assaly-Kaddoum R *et al.* **J Urol** (2016):196(3):950-6
Behr-Roussel D *et al.* **Eur Urol** (2005):47(1) : 87-91
Behr-Roussel D *et al.* **Am J Physiol** (2005):288(1):R276-283
Behr-Roussel D *et al.* **Am J Physiol** (2003):284(3):R682-688


***NB: Pelvipharm will gladly study the feasibility to fit this experimental model to its client's needs.***