Cyclophosphamide-induced bladder irritation

Model's advantages:

- Cyclophosphamide is a pro drug chemotherapeutic agent which ultimately leads to the formation of acrolein.
- Acrolein damages the bladder urothelium and can lead to hemorrhagic cystitis. Moreover, it produces a marked bladder overactivity mediated through the stimulation of C-fiber afferent.
- Useful to evaluate the effect of a drug on bladder inflammatory processes such as interstitial cystitis.

Species: rat

Physiological features:

- Abnormal bladder function; cystometrogram displays a decrease in intercontraction interval and a decrease in bladder capacity.
- Hematuria.
- Bladder wall edema.
- Increase in bladder weight.
- Inflammatory cell (polymorphonuclear neutrophils) infiltration in the bladder lamina propria.
- Increase C-Fos positive cells in the spinal cord (L6 level).

Treatment:

Saline

CYP

Figure 1: Representative pictures illustrating the inflammatory effect of cyclophosphamide on bladders from cyclophosphamide (CYP) treated rats. (From Giuliano.f et al. 2006)

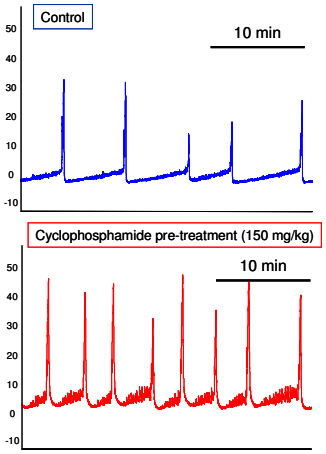

Figure 2 : Representative cystometrograms in anesthetized rats showing the effect of cyclophosphamide pre-treatment. (PVP, internal data).

Summarized methodology:

Rats are injected with vehicle or cyclophosphamide intraperitoneally (i.p) at the dosing of 100 mg/kg 48h before testing. Thereafter, urodynamic evaluation can then be performed (cf. Links to applicable experimental skills)

Related Pelvipharm bibliography:

Giuliano, F. *et al.* **Brit J Urol** (2006) : 97(2):386-392

Links to applicable experimental skills:

- **Administration routes / regimen**
- **Plasma / urine / tissue collection**
- **In vivo experiments – conscious animals**
  - * Urodynamic evaluation (cystometry)
- **Organ bath studies (EFS / Pharmacological studies)**
  - * Animal tissues
- **Biochemistry (Plasma / Urine / Tissue)**
  - * Spectrophotometric assays
  - * Protein expression and activity
- **Histology**
  - * Histomorphology
  - * Histomorphometry
  - * Oxydative fuorescence
- **Immunohistology / Confocal microscopy**
  - * Protein expression – immunohistochemistry / immunofluorescence
  - * Confocal microscopy