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:

![Representative pictures illustrating the inflammatory effect of cyclophosphamide on bladders from cyclophosphamide (CYP) treated rats. (From Giuliano, F. et al. 2006)](image1)

![Representative cystometrograms in anesthetized rats showing the effect of cyclophosphamide pre-treatment. (PVP, internal data).](image2)

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:


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
- Oxidative fluorescence
- Immunohistology / Confocal microscopy
  - Protein expression – immunohistochemistry / immunofluorescence
  - Confocal microscopy