Gastric lesions in conscious rats

The protocol is designed to detect the ulcerogenic/gastroprotective potential of compounds in conscious rats and to investigate the role of histamine receptors in gastric mucosal defense. This experimental model is widely used to detect the ulcerogenic potential of anti-inflammatory drugs.

1. Animal preparation

- House male Wistar rats (180-250 g) under controlled standard conditions (23±1°C, 55±10% humidity and a 12-h light/dark cycle). Withhold food from animals 18 hr prior to the experiment, but allow free access to water.
- Weigh each rat using an animal balance accurate to 1 g.
- Divide rats to receive randomly single doses of test compounds or the vehicle.

2. Evaluation of ulcerogenic activity

- Dissolve test compounds in the appropriate vehicle and administer by subcutaneous (s.c.), intraperitoneal (i.p.) or intragastric (i.g.) route in a volume of 1, 2 or 5 ml/kg, respectively.
- Administer vehicles or compounds under study at increasing single doses.
- At different times from compound administration, kill the rat by cervical dislocation and immediately remove the stomach, open along the lesser curvature, rinse with saline and lay on a flat surface.
- Evaluate the macroscopic gastric damage under a stereomicroscope. Measure each lesion along its greatest length (< 1 mm: rating of 1; 1-2 mm: rating of 2; >2 mm: rating according to lengths in mm) and designate the overall total as the “lesion index”.
- Express data as the means ± SEM from 6-8 rats per group.

3. Evaluation of gastroprotective activity

- Induce gastric lesions in fasted rats by a single administration of indomethacin (20 mg/kg s.c.), 0.6 N HCl (i.g.), ethanol (either at 50% or at 100%, v/v concentration, i.g.) or compound 48/80 (0.75 mg/kg i.p.).
- Dissolve test compounds as reported above (step 2).
- Administer vehicles or compounds under study (at increasing single doses) immediately before indomethacin, ethanol or compound 48/80, 30 min before HCl.
- Assess the gastric damage 6, 0.5, 1 or 3 hours after indomethacin, 0.6 N HCl, ethanol or compound 48/80, respectively. At different times from the administration of the ulcerogenic agent, kill the rat by cervical dislocation and immediately remove the stomach, open along the lesser curvature, rinse with saline and lay on a flat surface.
- Evaluate and measure the macroscopic gastric damage as reported above (step 2).
- Express data as the means ± SEM from 6-8 rats per group.

4. Materials and reagents

- Male Wistar rats (180-250 g)
- Animal balance accurate to 1 g (e.g. Sartorius)
- Analytical balance accurate to 0.1 mg
- Surgical instruments: sharp and blunt scissors, small straight anatomical forceps, large straight anatomical forceps
- 50-100 ml glass beakers
- 200-1000-5000 µl pipettes (e.g. Gilson)
- 1- and 2-ml syringes
- Magnetic stirrers
- Vortex mixers (with heater)
- Test compound solutions in the appropriate vehicle
- Prepare each compound immediately before use

References


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