Uterine contractions in anesthetized late-term pregnant rats

A MODEL FOR RECORDING SPONTANEOUS CONTRACTIONS OF THE UTERUS

Model

Premature birth affects 10% of all pregnancies. The mechanisms of labor involve increase uterine contractility in a regular and synchronized manner and cervical dilatation.
We developed a model to measure spontaneous uterine contraction in late-term pregnant rats.

Specie

Rat

Interest

This model is suitable for compounds acting on uterus contractions.
This model is validated with the clinically used and relevant compound nifedipine.
Compounds that produce positive effects in this model include β-mimetics, magnesium sulfate, calcium channel blockers or prostaglandin synthesis inhibitors.

Model Description

- Pregnant late-term (19 to 21 days of gestation) Sprague-Dawley rats were anesthetized with urethane.
- A polyethylene catheter was implanted into the jugular vein for intravenous administration of test compounds or vehicle.
- One pregnant uterine horn was exposed and its tubal end (near to ovary) was closed by a ligature with surgical silk.
- The uterine horn wall was incised, close to the ovary and a latex balloon was inserted into the lumen.
- After filling the balloon with physiological saline, the intra uterine pressure was recorded continuously.
- After surgery, a 60 min stabilization period was recorded.
- Test compounds can be administered *via* various routes (i.v., i.p., s.c., p.o.) in preventive or curative treatment.

Parameters evaluated

- The uterine contractile activity was quantified by calculating the area under the curve (AUC).
- The percentage of variation of the AUC after each substance administration was calculated in comparison to the values obtained before administration (Basal values).
- The effects of test substances on luminal uterine pressure were calculated by comparing pre- and post-treatment luminal uterine pressure values.

Effect of nifedipine on spontaneous uterine contraction in late-term pregnant rats: representative recording
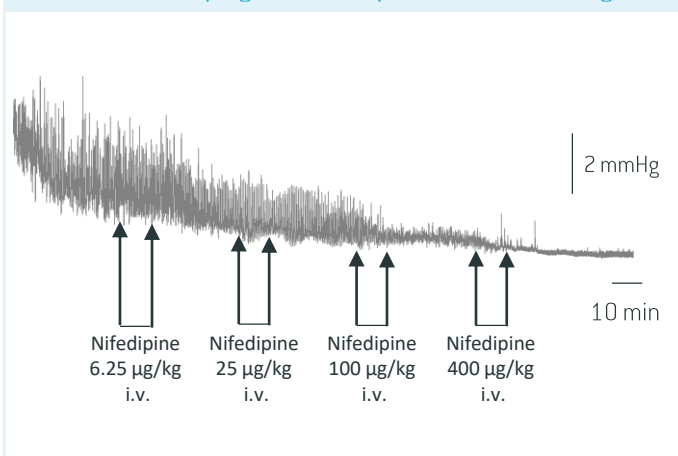
Effect of nifedipine on spontaneous uterine contraction in late-term pregnant rats: dose relationship effect