A relevant and validated mice model to study erection: Potentiation of erectile responses by vardenafil

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OBJECTIVES

Due to advances in molecular biology, genetically engineered mice have now become available. Since these mice contribute to the understanding of physiological mechanisms implicated in erectile function as well as the various pathophysiological processes occurring during ED, it is of importance to validate their use i.e. verify that they respond adequately to currently-approved treatments of ED.

We aimed to examine the erectile responses elicited by electrical stimulation in mice following an acute treatment with vardenafil, a currently-approved treatment for ED in order to validate the use of this model for the characterization of other pharmacological agents with potential use in the treatment of ED.

RESULTS

Mean arterial pressure under anaesthesia

![Graph showing mean arterial pressure under anaesthesia for different anaesthetics.]

The AUC is also best when mice are anesthetized with isoflurane although spontaneous erectile events occur more frequently.

Effect of anaesthetics on erectile responses

- Mean arterial pressure is better preserved in mice anesthetized with isoflurane compared to urethane or K/X.
- Different trains of stimulation (0.1-3 ms) elicit variable erectile response curves in isoflurane-anesthetized mice, thus indicating that an intensity of 0.3 ms is sufficient to elicit maximal responses at a given frequency.

Effect of variation of electrical parameters on erectile responses

- Vardenafil treatment at 0.1 mg/kg i.v. significantly enhances erectile responses elicited by electrical stimulation (0.3 ms – 6 V – 30 s) in mice.

CONCLUSIONS

- Anesthetic agents and electrical parameters of stimulation of the cavernous nerve are important determinants to conduct experimental studies on erectile function in vivo.
- This study has enabled the identification of the best experimental conditions to work with mice, validated by the potentiating effect of acute vardenafil on erectile function. It will allow future use of transgenic or knock-out mice to advance in the characterization of pharmacological agents with potential use in the treatment of ED.

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