

Pro-erectile facilitator effect of LIB-01 in type 2 diabetic rats

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Author list

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Introduction & Objectives

The active substance Lib-01 is a semi-synthetic molecule, originating from *Neobeguea mahafalensis* roots with a long tradition in Madagascar of ethnopharmacological use for the treatment of sexual disability. The effect of LIB-01 was tested on erectile function in both anaesthetized Wistar as control and Goto-Kakizaki (GK) rats, a validated model of type 2 diabetes mellitus (T2DM)-associated erectile dysfunction (ED).

Materials & Methods

Adult male GK (365 ± 3 g) and Wistar (432 ± 4 g) rats were treated by LIB-01 8 or 15 mg/kg or vehicle by subcutaneous injection (sc) once daily for 3 consecutive days (n=12 rats/experimental group). Erectile function was assessed 1, 2 or 7 days post last treatment by electrical stimulation of the cavernous nerve (ES CN) (6 V, 1 ms pulse for 45 s) at different frequencies under isoflurane anaesthesia.

Results

There was no safety signal post LIB-01 treatment whether in Wistar or GK rats.

In Wistar control rats, LIB-01 15 mg/kg/day sc for 3 days significantly increased ratios of intracavernous pressure (ICP) and area under the curve (AUC)/mean arterial pressure (MAP) when erectile function was tested 1 day post last administration vs vehicle-treated Wistar rats (at 10 Hz, ICP/MAP: + 11 %, p < 0.05). The ratios ICP/MAP and AUC/MAP were improved when erectile function was tested 2 days compared to 1 day post-treatment, and further increased when tested 7 days post treatment (at 10 Hz, ICP/MAP increased by 36 % and 48 % 2 and 7 days post-LIB-01 treatment respectively).

In GK rats erectile function was markedly impaired compared to age-matched Wistar rats (at 10 Hz, ICP/MAP was decreased by 32%, p < 0.0001). LIB-01 8 mg/kg/day sc for 3 days significantly increased ICP/MAP compared to vehicle-treated GK rats (at 10 Hz, ICP/MAP: + 13 %, p < 0.05) when erection was tested 1 day post last administration, without restoring normal erection compared to age-matched vehicle-treated Wistar rats.

Conclusions

LIB-01 sc treatment for 3 days significantly improved erectile function in normal Wistar rats. LIB-01 sc treatment for 3 days also improved erectile function in GK rats, a model of T2DM with ED. Interestingly the proerectile facilitator effect of LIB-01 lasted at least 7 days post-treatment and increased overtime in normal Wistar rats. The mechanism of action supporting the prolonged pro-erectile facilitator effect of LIB-01 remains to be investigated.