Title

Results of a first-in-human trial of LIB-01, a novel, first in class potential oral ED drug with unique pharmacodynamic properties

Introduction

LIB-01 is a novel and first in class, small molecule which is an analogue of the active component of a root bark long used in ethnopharmacology. This study reports the results of the first-in-human safety and erectile function study.

Objective

The objectives of this Phase 1 study were to evaluate the safety, tolerability, pharmacokinetics and erectile function properties of LIB-01, including onset and duration of action.

Methods

Healthy men, 18-65 yrs., underwent single or multiple ascending doses (MAD) ranging from 10 mg to 150 mg (MAD on day 1,2 and 3). Standard safety studies were performed over a 28-day period. The MAD group additionally had mild to moderate erectile dysfunction (IIEF-EF scores 11-25) and had erectile function assessments performed utilizing IIEF at baseline and Day 28 and real-time RigiScan® with VSS at baseline and Day 10. An open-ended question was asked on Day 14 and Day 28, to determine the duration of erectile effects.

Results

There were no serious adverse events and no drop-outs due to AEs. Following single dosing, the treatment-related AEs were few, mild, transient, and dose-dependent. One participant reported a prolonged erection. Following multiple dosing, the treatment-related AEs were few, mild, and mostly transient. The most common AEs were GI related (nausea, vomiting, diarrhea, frequent bowel movements), which occurred within 24 hrs. of the first dose and were resolved within 24 hrs. There were no clinically significant findings on clinical chemistry and hematology laboratory parameters, vital signs, or ECG.

After oral dosing of LIB-01, at all dose levels and dosing regimens, high plasma concentrations were observed with a peak at 15 to 120 min. At 12 h, plasma levels were below 3 % of the peak for all dose groups.

Erectile rigidity increased in the active drug group as measured by RigiScan® and self-reported improved erectile function (IIEF-EF domain score) was similarly observed in the active drug groups and was most pronounced in the 25mg, od X 3 days group with a mean change in IIEF-EF domain score of 7.8 and RigiScan® RAU of 3.8 (+40%) and 3.4 (+122%) for tip and base, respectively. The majority of responders experienced the onset of improved erectile function within the first 7 days post-first dose and it remained until Day 28 (end of study).

Conclusions

LIB-01, a novel and first-in-class molecule, was safe and well tolerated in males when orally administered at single and multiple ascending doses ranging from 10 mg to 150 mg. In addition, erectile function improvements were demonstrated utilizing the IIEF-EF and RigiScan®. Most interestingly, a unique pharmacodynamic profile was observed with an onset within 7 days and a duration of action of *at least* 28 days. The long duration of action combined with the short plasma half-life point to a new MOA for potential use in ED therapy and one that would dramatically change the paradigm of management. A Phase 2a study has now been initiated.