**Abstract**

MN-221 (bedoradrine) is a novel, highly selective beta2-adrenergic receptor agonist under development for the treatment of acute exacerbation of asthma and chronic obstructive pulmonary disease (COPD). This drug candidate safely and effectively Increases FEV1 in patients with mild to moderate asthma. The purpose of this study was to assess safety and efficacy of MN-221 in subjects with mild to moderate asthma.

**Efficacy & Safety Endpoints**

- Primary efficacy endpoint was the change from pre-infusion to post-infusion FEV1
- Secondary efficacy endpoint was the change at each scheduled post-dose timepoint
- Safety was evaluated by adverse events (AEs), clinical laboratory findings, physical examination findings, electrocardiograms (ECGs), and changes in vital signs

**Study Design**

- Randomized, double-blind, placebo-controlled, multi-center blinded, placebo-controlled, multi-center
- MN-221 (bedoradrine) was administered via intravenous infusion in patients with mild to moderate stable asthma
- Eligible patients were enrolled and randomized to one of four different treatment groups

**Major Inclusion/Exclusion Criteria**

- Subjects meeting all of the following criteria were considered eligible for admission to the study:
  - Age 35 to 70 years, inclusive
  - FEV1 ≥ 60% predicted
  - FEV1/FVC ratio ≥ 0.7

- Subjects were randomized to one of four different treatment groups:
  - 10 µg/min
  - 20 µg/min
  - 30 µg/min
  - Placebo

- Each treatment sequence consisted of placebo and escalating doses of MN-221 (total doses of 5.25 µg, 240 µg, 450 µg and 900 µg of MN-221 were administered)

**Analysis of Changes in Percent Predicted FEV1**

- Analysis of Changes in Heart Rate (bpm) from Start of Infusion

**Clinical Implications**

- MN-221 may represent a safe and novel adjunctive approach for treating acute asthma exacerbations

**CLINICAL IMPLICATIONS:**

- Baseline FEV1 improvements in FEV1.
- Optimal effect at 450 and 900 µg doses of MN-221 versus placebo.
- Mean changes in FVC were statistically significant in the 450 and 900 µg doses of MN-221 versus placebo.
- No SAEs or dropouts from study due to AE
- No adverse QT changes
- Maximum heart rates remained below 100 bpm
- No adverse OT changes
- No SADs or dropouts from study due to AE
- PK of MN-221 was linear and dose proportional from 0.33 to 600 µg/min
- Elimination half-life was ~10 hr and consistent across doses

**MN-221 Safety & PK Conclusions**

- Eliminations of all doses of MN-221 were well-tolerated in this patient population
- Maximum heart rates remained below 100 bpm
- No adverse OT changes
- No SADs or dropouts from study due to AE
- PK of MN-221 was linear and dose proportional from 0.33 to 600 µg/min
- Elimination half-life was ~10 hr and consistent across doses