Background
Respiratory Syncytial Virus (RSV) is a major cause of acute upper and lower respiratory tract infection in infants, young children, and adults. BTA585 is an oral, selective F-protein inhibitor of RSV A and B in development for the treatment of RSV infections.

Methods
A single ascending dose (SAD) study evaluated the safety and pharmacokinetics (PK) of single oral doses of BTA585. The starting dose was 50 mg with escalating dose level cohorts of 100 mg (both fed and fasted to assess food effect), 200 mg, 400 mg, 500 mg, and 600 mg. Following the SAD study, a multiple-ascending dose (MAD) study evaluated the safety and PK profile of 100 mg BID, 400 mg BID, and 600 mg BID over 7 consecutive days of fasted dosing. BTA585 was also measured in nasal wash fluid in the MAD study.

Results
BTA585 was well-tolerated in both single and multiple dose trials. The most common adverse events (≥2 subjects in both studies) were diarrhea, nausea, headache, and nausea. There were no SAEs, or drug-related clinically-significant adverse changes in ECGs or clinical lab values in either the SAD or MAD studies. High precision, dose-response assessment of ECG data from all SAD cohorts was also conducted. There was no meaningful or statistically significant relationship between BTA585 exposure and placebo-controlled change from baselines in QTf, and an effect of BTA585 on QTf was not observed.

BTA585 was rapidly absorbed across all single doses, with median T_{max} of ~1 hour and T_{1/2} ranging from 6 to 7 hours. A significant food effect on PK was not observed. In both SAD and MAD studies, C_{max} and AUC increased dose-proportionally with single and multiple doses. The predicted antiviral levels of BTA585 were rapidly achieved and maintained with no significant accumulation. In the MAD study, levels of BTA585 in nasal wash fluid increased with exposure, were present as early as 3 hours post first dose and still detectable 24 hours after last dose in all groups.

Conclusions
BTA585 demonstrated a favorable safety and pharmacokinetic profile across all dose cohorts in these Phase 1 studies. Antiviral levels of BTA585 in the plasma were reached rapidly and exceeded the IC_{50} for clinical isolates of RSV. These safety and pharmacokinetic results support further clinical evaluation of BTA585.