TARGETING AN INHALED ERYTHROPOIETIN-Fc FUSION PROTEIN (Epo-Fc) TO THE HUMAN LARGE CENTRAL AIRWAYS

Darren Clark1, Matthew Pickford1, Sean Evans1, Alan Bitonti1, Andrea Bauer1, Steve Newman1.
1Pharmaceutical Profiles Ltd, Nottingham, UK
2Syntorx, Inc., Wallingford, MA, USA

Introduction
The inhaled route is an attractive option for the delivery of peptides and proteins that are generally subject to degradation in the gastrointestinal tract. Aerosolisation and delivery to the desired target site within the airways is critical to the success of the drug. The major target regions are the large central airways, where the drug is most likely to reach the pulmonary vasculature and the lungs. Various techniques have been developed to achieve this, including the use of inhalers and nasal sprays, but often with limited success.

Methods
A formulation of Epo-Fc was developed that includes a synthetic peptide, which is not a known inhalation candidate, to enable delivery to the large airways. The formulation was evaluated using a novel technology that enables deposition in the large airways of the lung. This technology allows the formulation to be delivered and retained in the large airways, where it can be absorbed and enter the pulmonary vasculature.

Results
Deposition of the formulation in the large airways was confirmed using a novel technology that enables deposition in the large airways. The formulation was shown to be effective in delivering the drug to the large airways, where it can be absorbed and enter the pulmonary vasculature.

Conclusions
The results demonstrate the potential of Epo-Fc as an inhalation candidate for the treatment of conditions affecting the large airways. Further studies are required to fully evaluate the potential of this formulation in clinical trials.

References

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Pharmacokinetic details
Pharmacokinetic data: Epo-Fc serum concentration was dose dependent.

Pharmacodynamic response
Pharmacodynamic response (increase in Epo-Fc serum concentration) was dose dependent.

Mean deposition in the large airways (Group 1) was significantly higher than in Group 2.

The Lung Penetration Profiles, showing normalized distribution across the large airways, were similar for each dose level.

Central lung region dose and inhalation parameters
Mean deposition in central airways (zone 1 to 4) was significantly higher than in Group 2.

The formulation was shown to be effective in delivering the drug to the large airways, where it can be absorbed and enter the pulmonary vasculature.

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