GAP Peptides, LLC Process Metrics for Synthesis of Human Secretin
Using Group Assisted Purification Peptide Synthesis (GAP-PS)

Secretin is a peptide hormone secreted in the small intestine. It is composed of 27 amino acids, and it was discovered in 1902. Researchers working with it subsequently found that chemical messages could act at a distant site to regulate bodily functions.

Why should you care? Secretin in your body exerts pharmacological effects on many organs in the body, including the heart, kidney, lung, and brain.

Why does GAP Peptides care? Synthetic human Secretin can be made in a lab; however, it is quite expensive for consumers. A quick online search revealed costs of > $500 USD for a single dose. When synthesizing peptides, producers face high cost of goods, limited scalability, and other manufacturing challenges. Historically, making peptides >20 aa and the volume of hazardous chemicals (and their generated waste) have been significant obstacles limiting a broader commercial application of peptides (Isidro-Llobet *et al.*, 2019; Loibl *et al.*, 2016). Thankfully, newer technologies are making possible what used to be impractical.

GAP Peptides synthesis of Secretin was achieved in a single chain, synthesized entirely with GAP-PS ***solution-phase chemistry***. The unoptimized synthesis yielded more than 5 grams of crude peptide, with HPLC purity of 71% and a net peptide yield of 62%, with an E-factor for the upstream process of 715 (Kg / Kg). For comparison, an SPPS process for similar peptides is expected to have an E-factor between 4,000 and 6,000 (Kg / Kg).

What's the big deal? Synthetic peptides are used in everything from agriculture to veterinary medicine. Peptide therapeutics have proven to be life-changing in addressing global health and well-being. GAP Peptides' green approach to peptide synthesis is changing the playing field for biotech manufacturing. Peptide therapeutics that can be unaffordable if made using traditional synthetic processes can now be made more economically and more sustainably with GAP-Peptide Synthesis. Learn more about our technology at https://www.GAPPeptides.com/