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BIONEEDS

Peptide Analysis

Insights into Veeda's Proficiency in Analyzing Peptide Molecules with Precision

Desmopressin

Challenges

- Required an assay with a detection limit 20 times lower than the Cmax value
- Difficult to achieve sensitivity and selectivity due to its nature as a peptide analogue

Solution

- Developed and validated a method with sensitivity up to 1.00 pg/mL
- Utilized solid phase extraction (SPE) and reversed-phase sub-micron columns for effective separation from endogenous materials in blood
- Employed high-end LC-MS machines (e.g., Sciex 6500+) and precise handling protocols

Result

- Achieved a calibration range of 1.056 pg/mL to 264 pg/mL
- Secured an acceptance rate of over 98.0%

Insulin Aspart

Challenges

- Selection of unique mass transition
- Cross-reactivity with naturally occurring human insulin
- Identification of suitable internal standard compounds
- Non-specific binding issues

Solution

- Developed and validated a method with a unique MRM pair for selective measurement of Insulin Aspart
- Optimized extraction protocol to avoid non-specific binding
- Refined solid phase extraction protocol for accurate measurement down to 0.1 ng/mL

Result

- Achieved a calibration range of 1.056 pg/mL to 264 pg/mL
- Secured an acceptance rate of over 98.0%

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Insulin Glargine

Challenges

- Traditional quantification methods like ELISA and LC-MS/MS have significant drawbacks
- ELISA lacks specificity and cannot distinguish insulin glargine from other insulin analogs and its metabolites (M1 & M2)

Solution

- Developed an LC-MS/MS method with unique MRM pairs for glargine, M1, and M2
- Optimized mass parameters to achieve desired sensitivity, especially for poorly ionizing metabolites
- Addressed separation challenges by selecting specific peptide columns and eliminating carryover with different organic modifiers
- Solid phase extraction protocol minimized ion suppression and interference from the sample matrix

Result

- Simultaneously analyzed insulin glargine and its metabolites in a single injection method
- Achieved calibration ranges of 0.2 ng/mL to 5.0 ng/mL for insulin glargine, 0.16 ng/mL to 4.0 ng/mL for M1, and 0.166 ng/mL to 4.150 ng/mL for M2

Octerotide

Challenges

- Octreotide quantitation in human plasma is analytically challenging because of the low abundance of this drug in plasma
- Challenging to monitor and quantity Drug concentrations at low pg/mL levels

Solution

- Chosen appropriate pair of Mass transition and selected best suitable column to quantify up to 20pg/mL
- Optimized extraction protocol by using ion-exchange cartridges to overcome challenges of matrix effect and selectivity.

Result

- Method was fully validated with Linearity range 20pg/mL to 10ng/mL
- No any significant carryover observed and also no any matrix effect observed Recovery is consistent and reproducible across all Quality control level