

Simultaneous detection and quantification of gastrin 17 and 34 sulfated and non-sulfated forms by LC-MS/MS in human plasma

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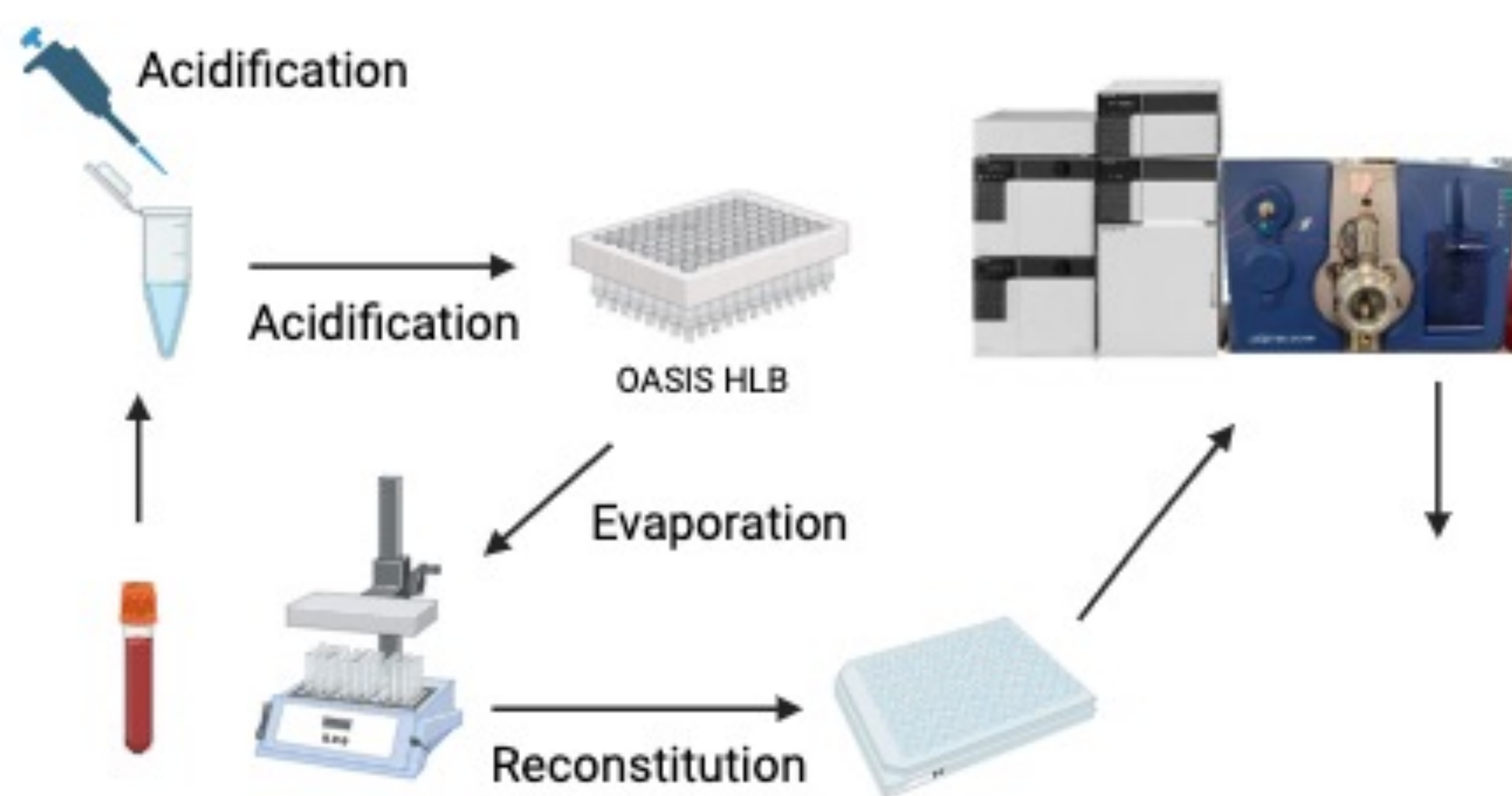
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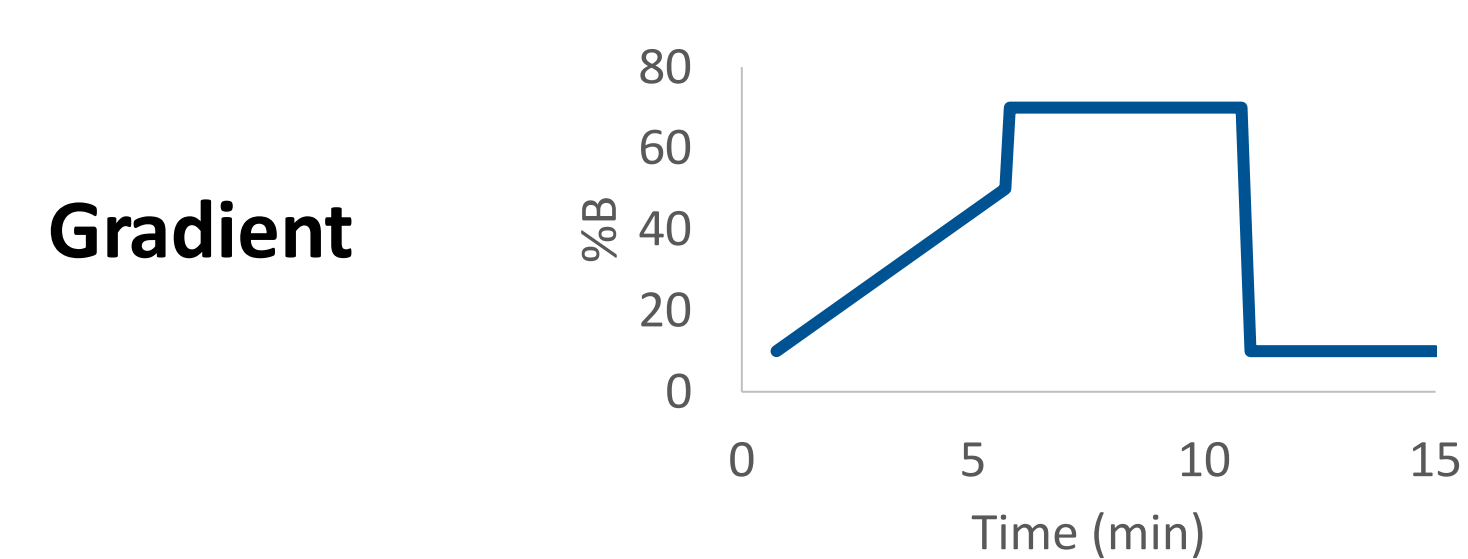
Introduction:

Gastrin, secreted by G cells plays a crucial role in digestion and has diverse functions including regulation of the intestinal epithelium and stomach growth. Gastrin peptides are derived from progastrin. Peptides G17 and G34 are the most abundant in the blood. Both of them may be sulfated. Current gastrin measurement relies on the DAsource RIA kit. However, it display cross-reactivity issues.

Materials and Methods:



| | |
|----------------------|--|
| Column | BEH Peptide C18 130Å column 100 × 2,1 mm, 1.7 μm - Waters |
| Mobile phases | A: H ₂ O + 0,1% NH ₄ OH B: ACN |
| Signal mode | Electrospray – Negative |



Results:

Q1 Scan – MRM – Post column flow injection

| | G34 | G34S | G17 | G17S |
|-----------------------------|---|--|---|--|
| Transitions | 768,8 > 716,0 | 784,9 > 732,4 | 523,4 > 610,8 | 434,5 > 478,0 |
| Compounds parameters | DP: -122,5 EP: -7,0 CXP: -12,0 CE: -28,0 | DP: -122,5 EP: -10,0 CXP: -12,0 CE: -22,0 | DP: -122,5 EP: -8,0 CXP: -12,0 CE: -22,0 | DP: -122,5 EP: -10,0 CXP: -12,0 CE: -21,0 |
| Source parameters | CUR: 20,0 CAD: Medium | IS: -3500 TEM: 650 | GS1: 40,0 GS2: 50,0 | |

Validation steps

| | |
|----------------------|---------------------------|
| Recoveries | 43-62% |
| Matrix effect | No matrix effect observed |

Change to ESI +

- Colum lifetime issues >> high pH of the mobile phases
- Derivatization of the carboxylic acids

Conclusion:

- Choose the detection mode: ESI -/ ESI +
- Validation planned according CLSI guidelines