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

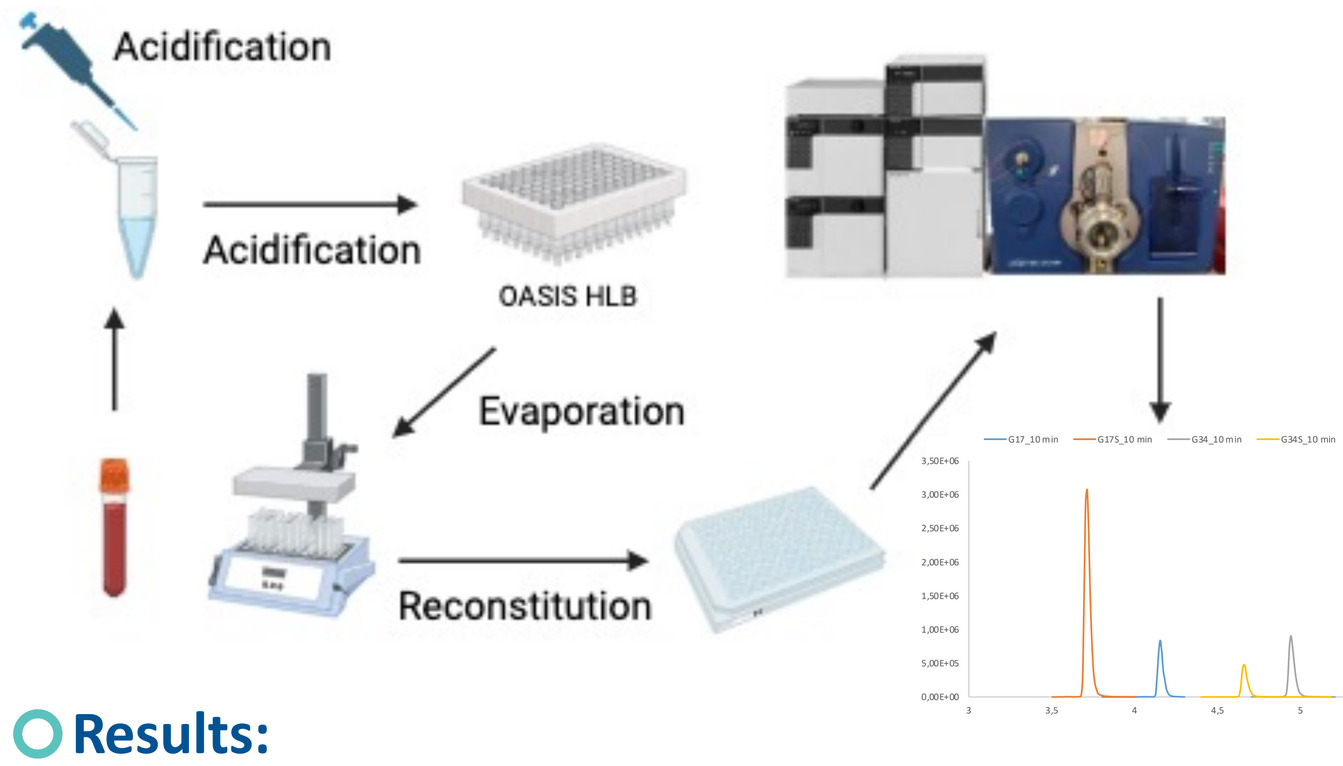
Loreen Huyghebaert[1], Philippe Massonnet[1] , Elodie Grifnée[1], Justine Demeuse[2], Thomas Dubrowski[1], Matthieu Schoumacheri[1], Stéphanie Peeters[1], Etienne Cavalier[1,2], Caroline Le Goff[1,2]

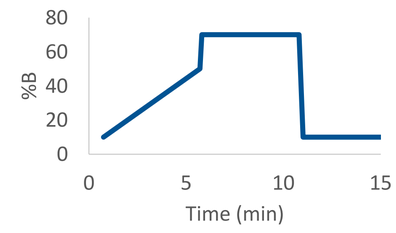
[1] Department of Clinical Chemistry, CHU of Liège, Belgium
[2] Department of Clinical Chemistry, University of Liège, Belgium

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 DIAsource RIA kit. However, it display crossreactivity issues.

Materials and Methods:



Column	BEH Peptide C18 130Å column 100 × 2,1 mm, 1.7 µm - Waters
Mobile phases	A: H_2O + 0,1% NH_4OH B: ACN
Signal mode	Electrospray – Negative
Gradient	

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

Conclusions:

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