

# Development of a quantification method for Vasopressin and Oxytocin using liquid chromatography coupled to tandem mass spectrometry.

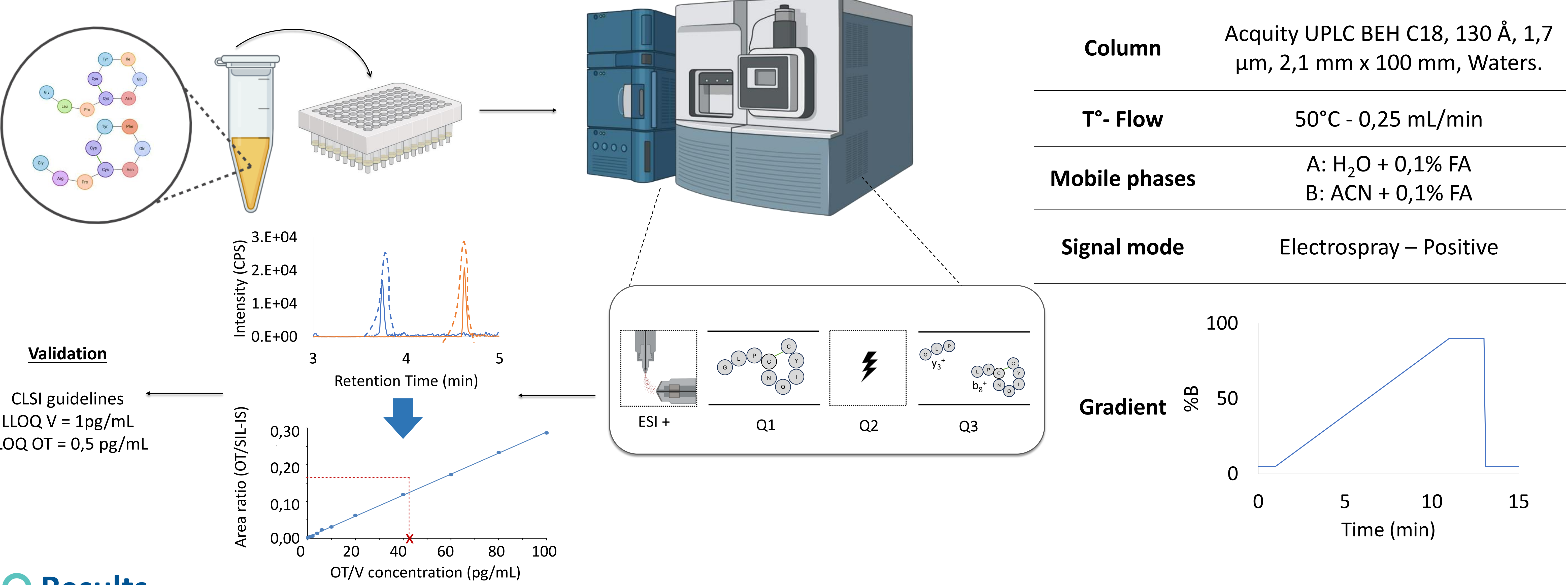
E. Grifnée<sup>1,2</sup>, N. Xhenseval<sup>1</sup>, A. Mackowiak<sup>2</sup>, J. Demeuse<sup>2</sup>, L. Huyghebaert<sup>1,2</sup>, P. Massonnet<sup>1,2</sup>, T. Dubrowski<sup>1,2</sup>, S. Peeters<sup>1</sup>, E. Cavalier<sup>1,2</sup> and C. Le Goff<sup>1,2</sup>

<sup>1</sup> Department of Clinical Chemistry, University and CHU of Liège, Belgium  
<sup>2</sup> Center for interdisciplinary Research on Medicines, ULiège, Liège

## Introduction

Vasopressin and oxytocin are both neuropeptides, each consisting of 9 amino acids, produced by the hypothalamus and secreted by the posterior pituitary. Their respective roles include the regulation of plasma osmolarity through urinary volume modulation and the regulation of social behaviors or the initiation of uterine contractions. These two hormones are involved in pathologies such as diabetes insipidus for vasopressin while oxytocin is involved in autism, depression, and schizophrenia<sup>1-2</sup>. The implication of these peptides in various disorders suggests that precise quantification could benefit patient care. Currently, quantification of vasopressin and oxytocin is mainly performed through immunological methods but is still uncommon. These techniques face issues with specificity and can vary across laboratories. The development of a quantification method through a gold standard technique, such as liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS), is essential for harmonizing biological sample assays and standardizing vasopressin and oxytocin quantification.

## Materials and Methods

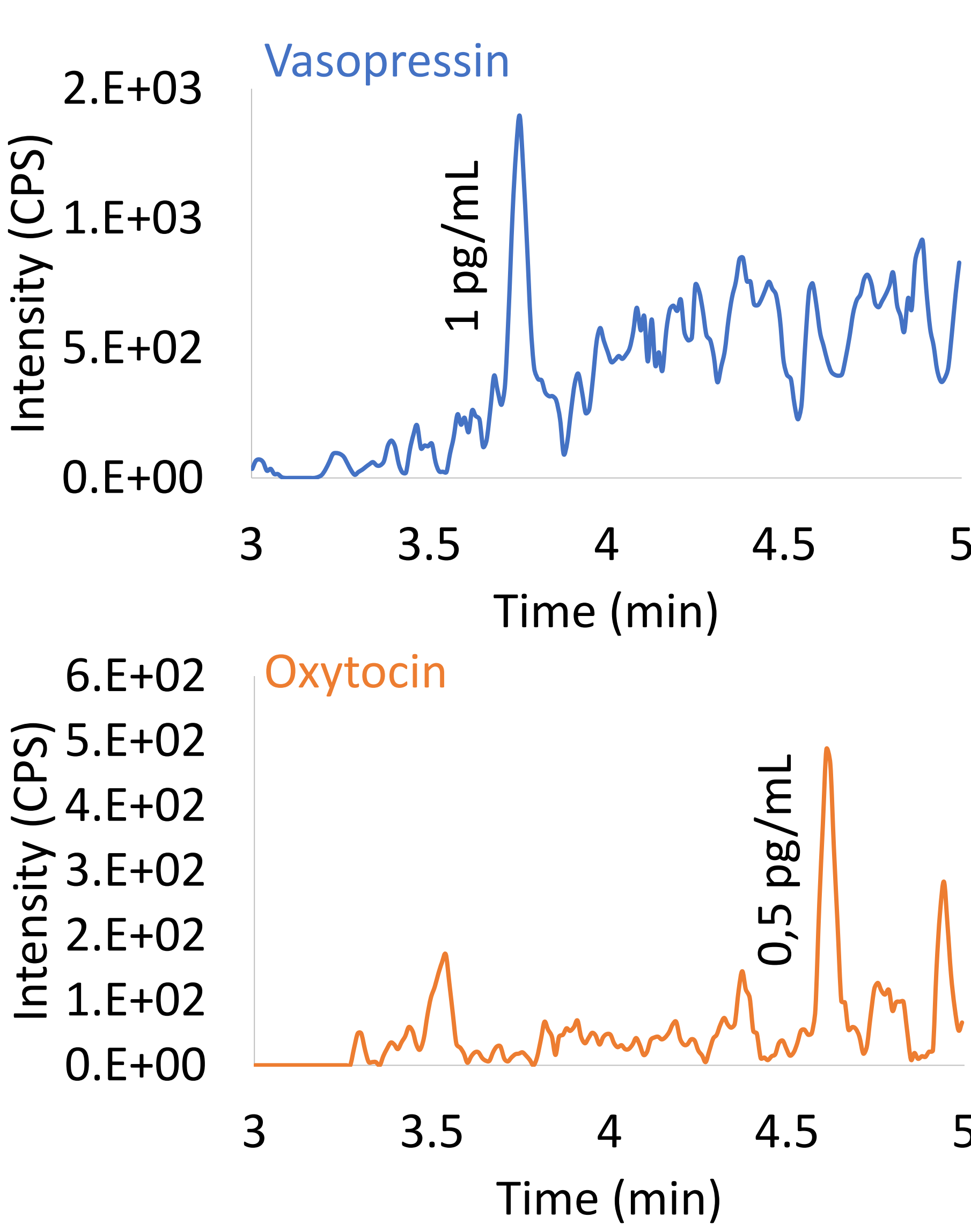


## Results

### Validation steps

Oxytocin	Vasopressin
<b>Recovery</b>	
88%	82%
<b>Matrix effect</b>	
20%	55%

### Lower limit of quantitation



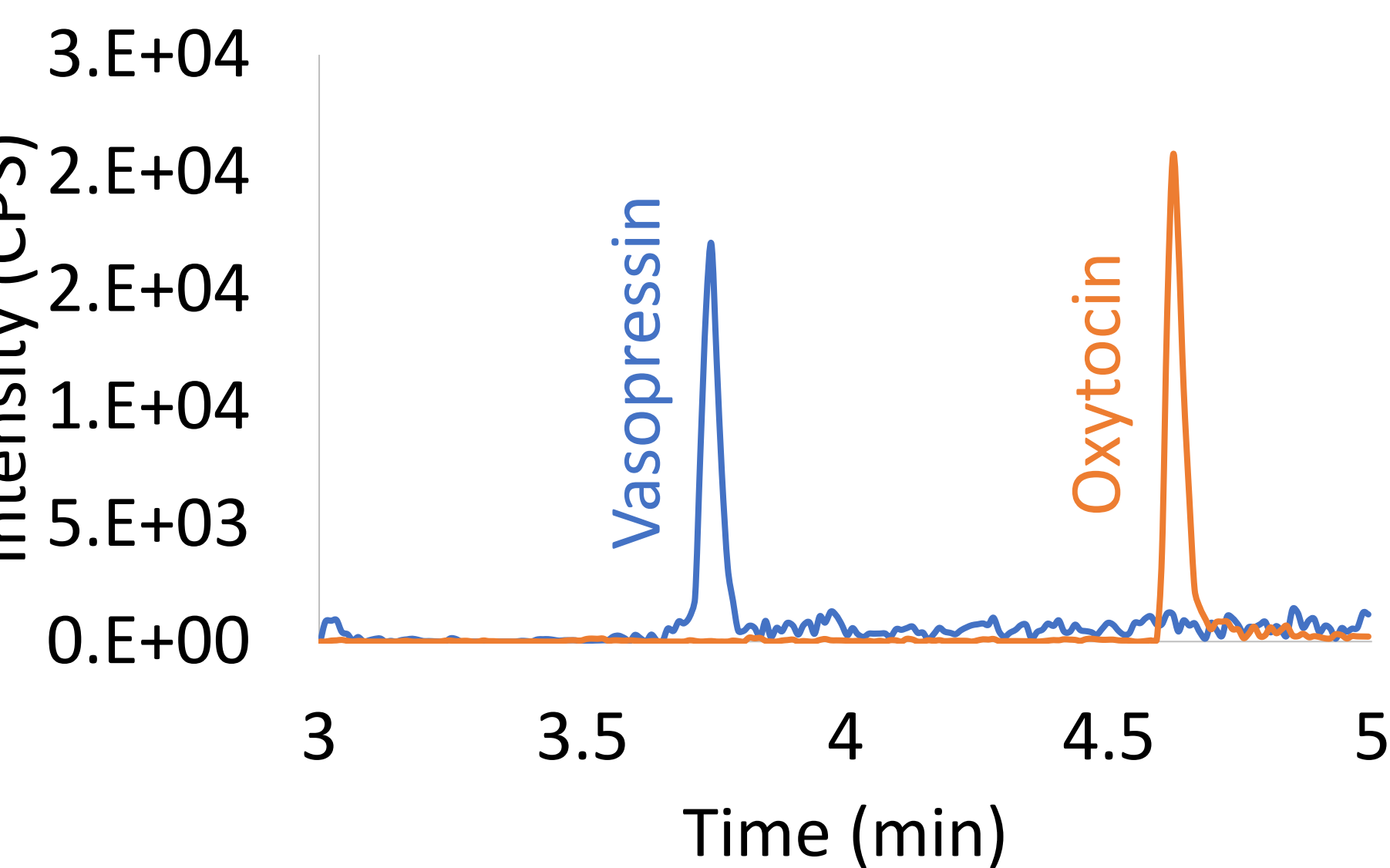
### Linearity

Expected concentration (pg/mL)	Calculated concentration (pg/mL)	Accuracy (%)	CV (%)
24	53,3	222,2	7,5
48	92,0	191,6	19,5
72	298,3	414,4	28,2
96	262,0	267,4	45,4
120	534,0	445	14,1

Expected concentration (pg/mL)	Calculated concentration (pg/mL)	Accuracy (%)	CV (%)
24	25,7	107	9
48	50,3	104	2
72	82,2	114	6
96	97,9	102	4
120	122,1	102	5

### Chromatographic separation



## Conclusions

LC, MS and SPE were optimized and led to a LLOQ of 1 pg/mL for Vasopressin and 0,5 pg/mL for Oxytocin.

## Perspectives

- Synthesize the IS of Vasopressin
- Decrease the LLOQ for Vasopressin
- Validation of the method according to CLSI guidelines