

INTRODUCTION AND CONTEXT

Added value bio-active peptides are produced from hydrolyzed proteins, ideally from byproducts. Colostrum is the first rich milk produced by mammalian in the first few days after parturition, providing antibodies and other bio-active compounds to the calf. Bovine colostrum is a byproduct of the milk industries, and mostly goes to waste. This protein-rich waste is produced in high quantity worldwide is thus a promising source for potential bio-active (glyco- and phospho-)peptides.

Ion mobility spectrometry (IMS) operates in the gas phase at moderate pressure. The ions are separated by their charge state, induced by the ESI source, as well as their shape, described in terms of collision cross section (CCS), while CE operates in solution. Ion mobility coupled to mass spectrometry (IM-MS) also improves the peak capacity of separation methods coupled to MS.

Preliminary data of Milk non-reduced protein hydrolysates have been produced and investigated by CE-(IM)MS.

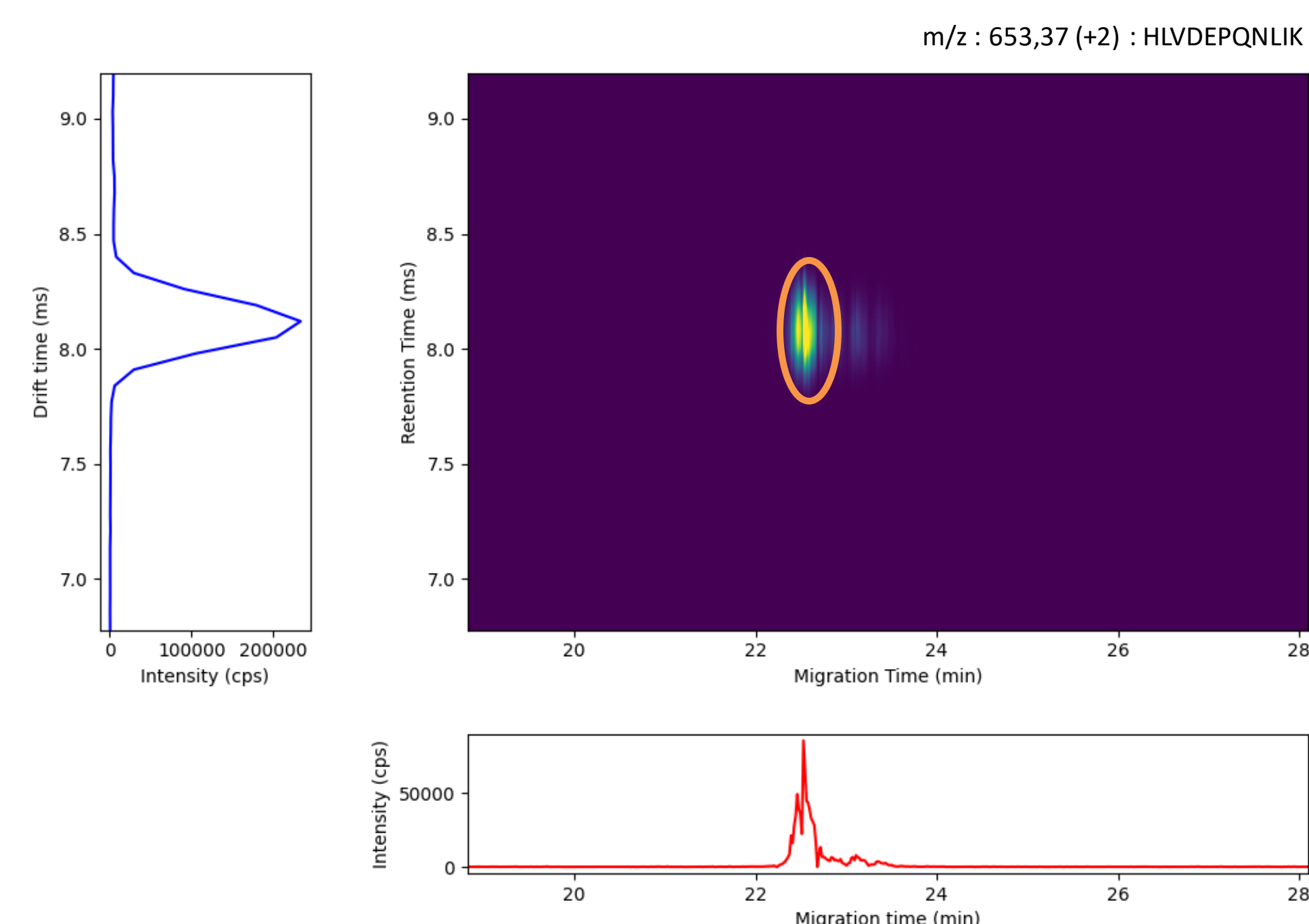
BSA TYPTIC PEPTIDES CONFORMATION IN THE LIQUID AND GAS PHASE

Behaviour 1 :

- 1 peak in CE
- 1 peak in IMS

→ Expected

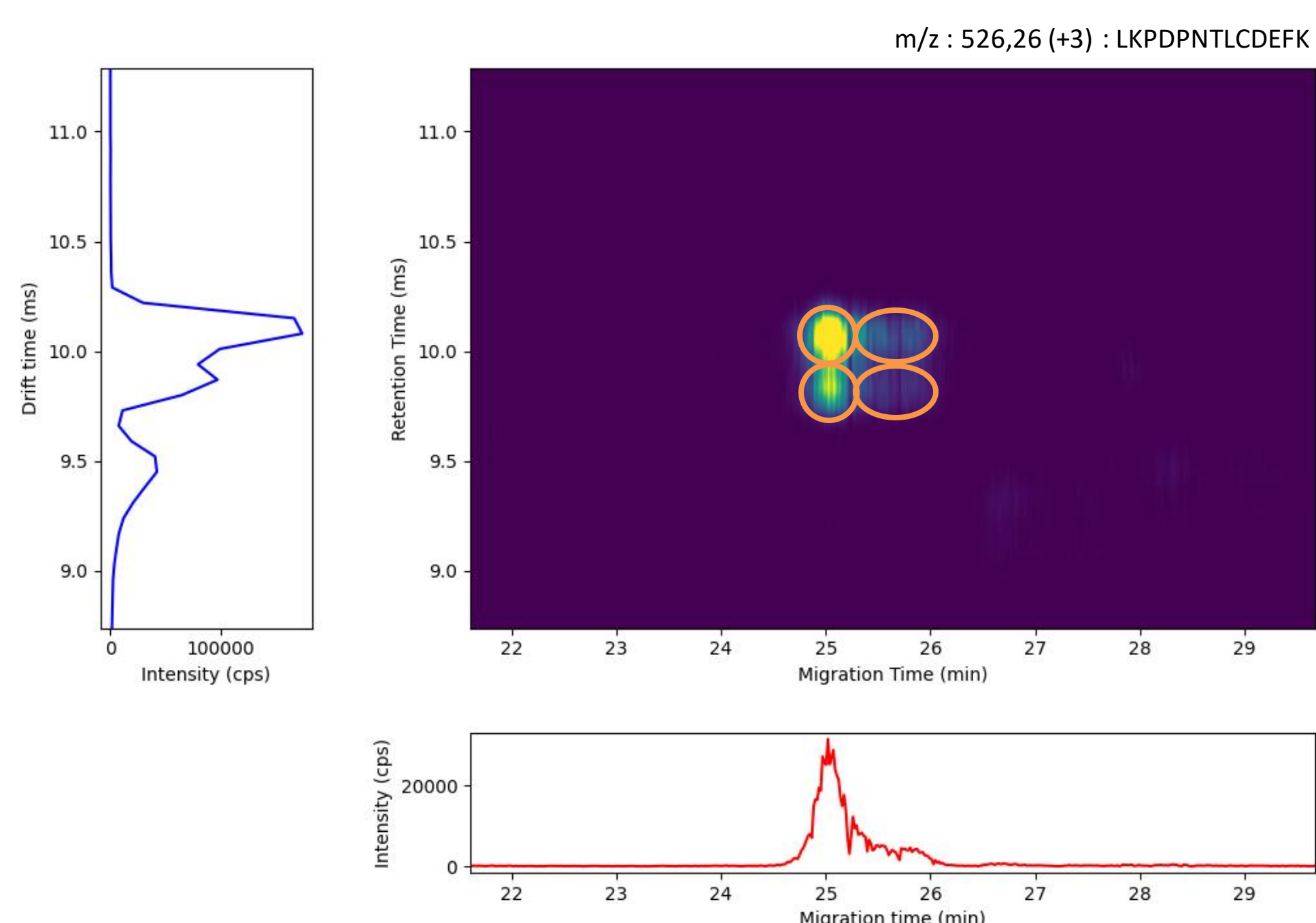
Observed for most peptides



Behaviour 2 :

- 2 peak in CE
- 2 peak in IMS

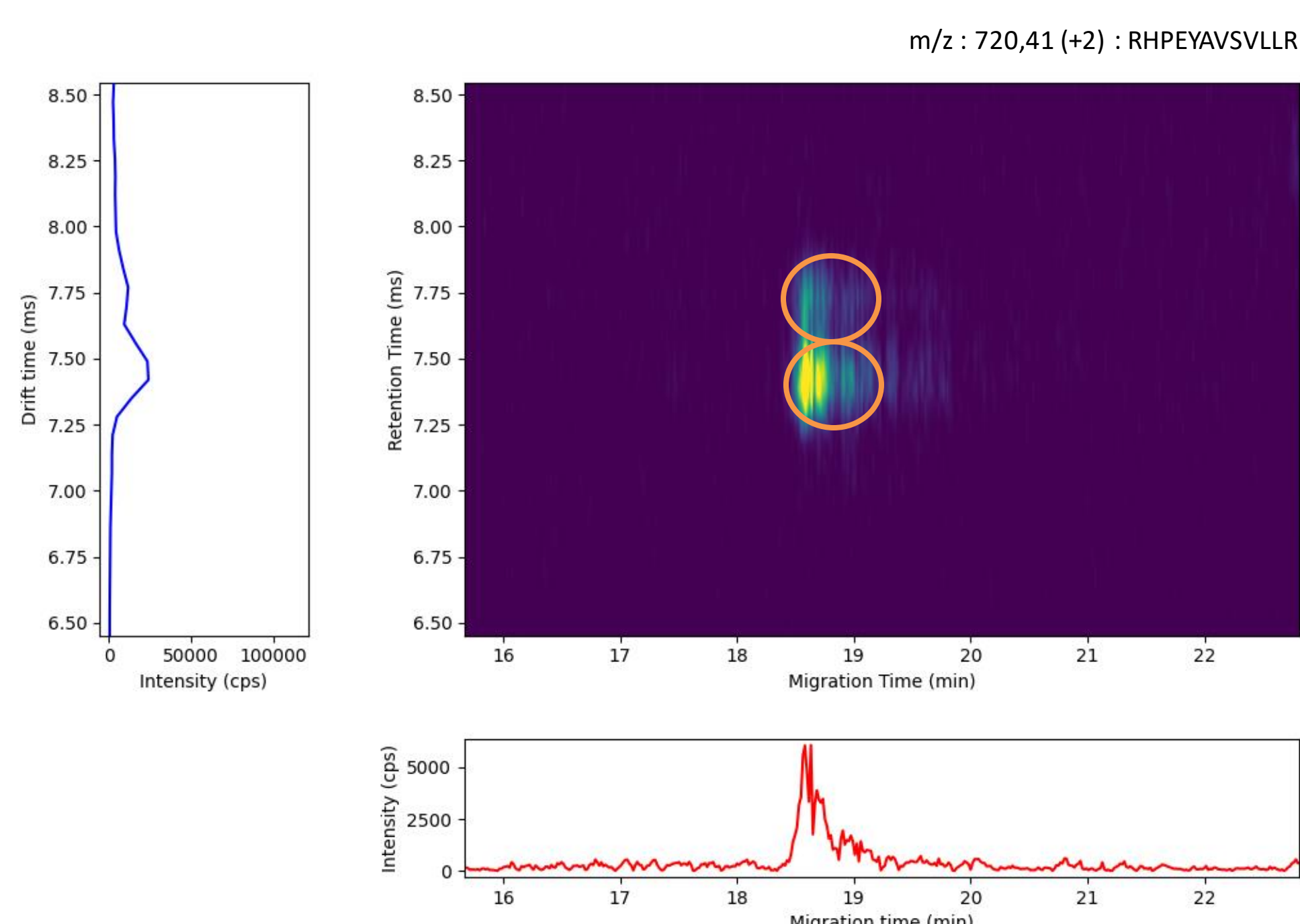
1 peak in CE ≠ 1 peak in IMS



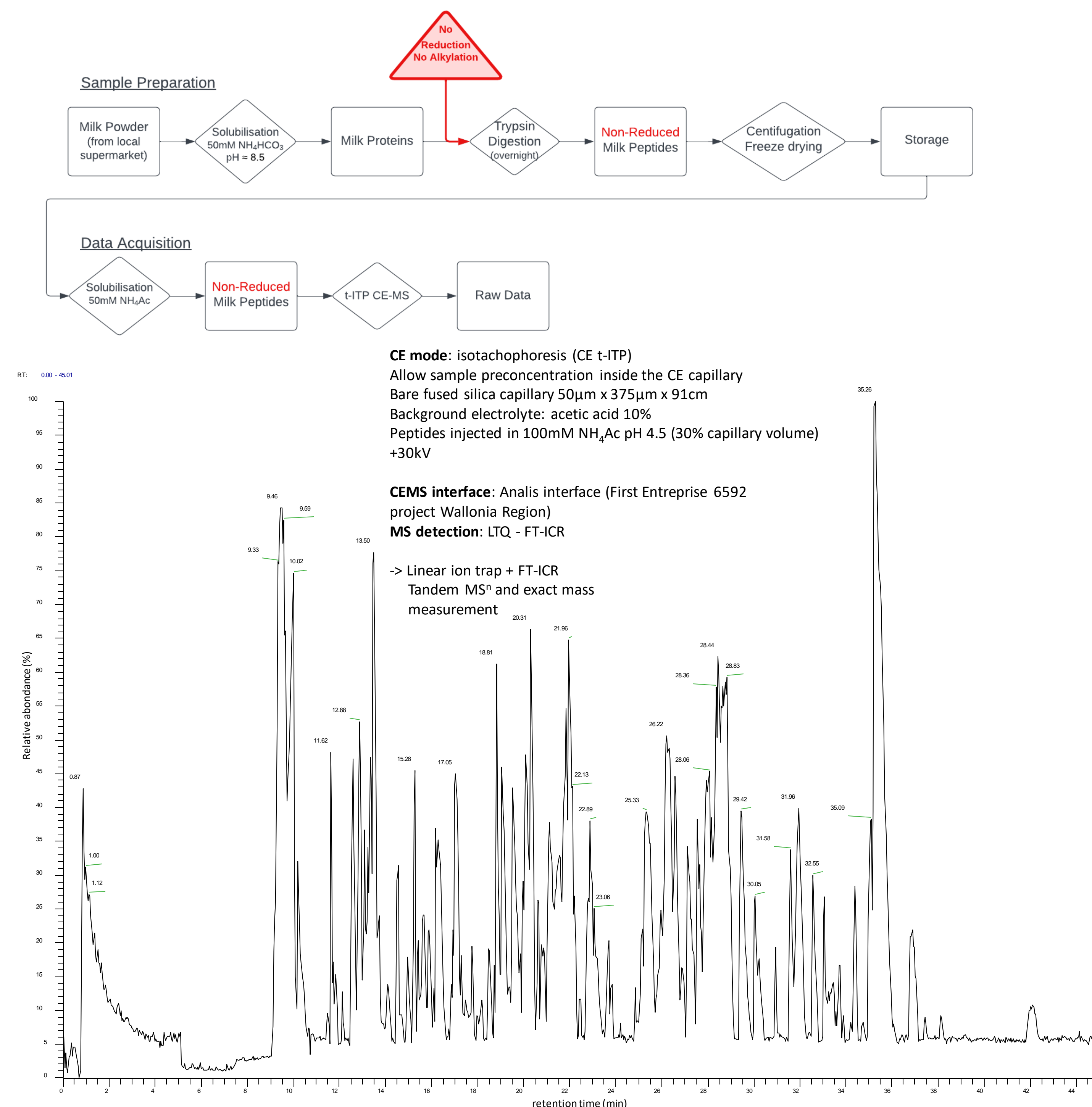
Behaviour 3 :

- 1 peak in CE
- 2 peak in IMS

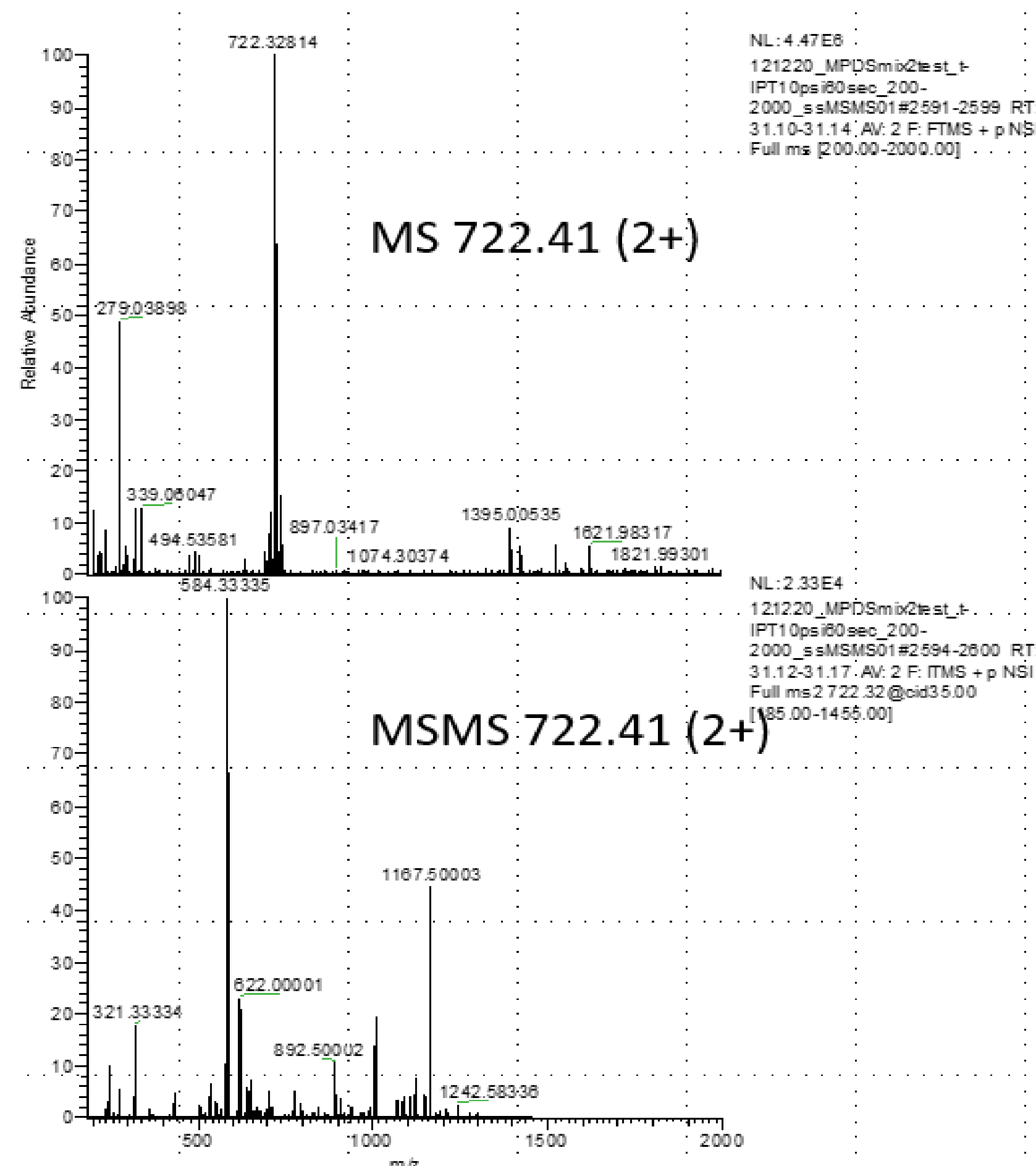
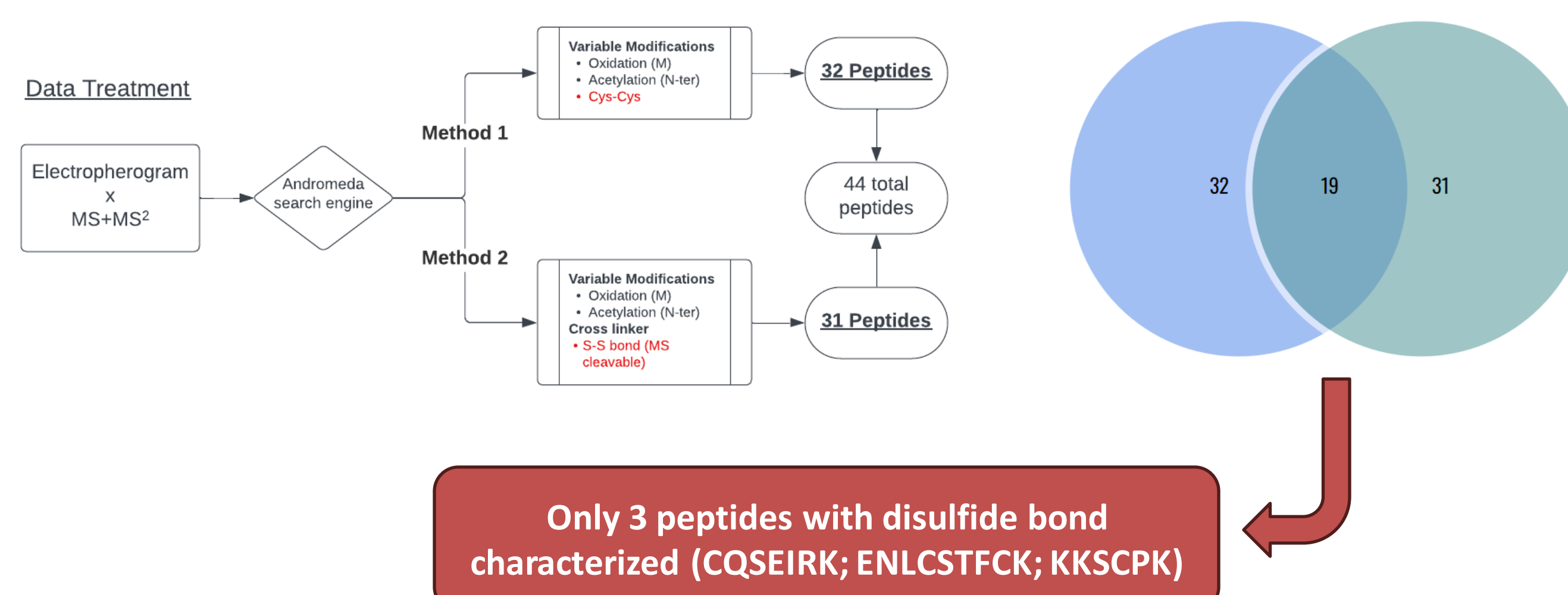
Fast equilibrium in solution or conformational change during ionization process ?



T-ITP OF NON-REDUCED MILK TRYPTIC DIGEST



DATA TREATMENT



Bioactive peptide not detected by MaxQuant

→ Need for more efficient data processing workflow

Acknowledgment

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Sources

Weber D., Raymond P., Ben-Rejeb S., Lau B., Journal of Agricultural and Food Chemistry (2006) vol. 54, pp 1604-1610