Fortis™ Technologies Ltd.

Application Note

Amino Acid's

Introduction

Amino acids are always compounds of interest due to their availability in so many samples in biochemistry.

Having many functions in metabolism critical to life and seen as the building blocks of proteins, linear chains of amino acids can be formed in many sequences to produce a variety of proteins.

There are 22 'standard' amino acids, many are important in nutrition, both human and animal, and incorporated in food and food supplements. Amino acids can also be utilised in biodegradable plastics, drugs, cosmetics and chiral catalysts.

"Analysis of amino acids is made challenging by the diversity of the various analytes involved"

HPLC Analysis

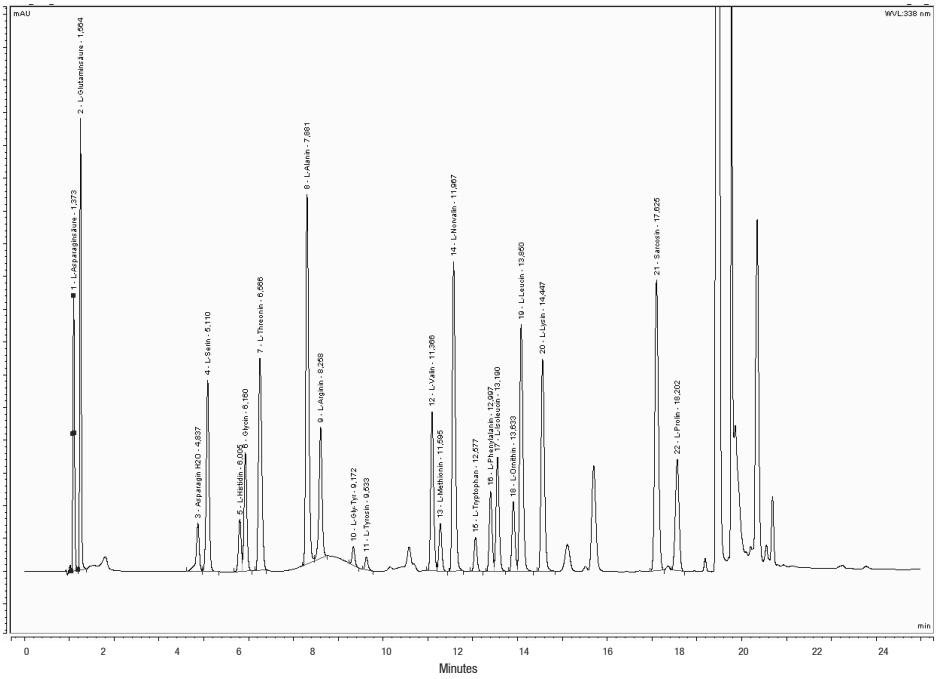
Analysis of the amino acids is made challenging by the diversity of the various analytes involved. A variety of hydrophobicities and functionality, basic, acidic and neutral . The amine and carboxylic functional groups present allow the amino acid to have amphiprotic or zwitterionic properties, either the carboxylic acid or the amino group being charged. This makes it difficult to choose the correct pH and to retain the diversity present.

Conditions

Column : 5um Fortis H2o 150x2.1mm

Buffer A: 2.72g NaOAc in 1000ml Water + 1.8ml TEA (pH=7.3) + 3ml THF

Buffer B: 2.72g NaOAc in 200ml Water + 400ml MeOH + 400ml ACN



Gradient :

0.00min flow - 0.45ml/min %B - 2%
1.00min %B - 2%
17.00min %B - 60%
18.00min %B - 100%
18.10min flow - 0.8ml/min
23.90min flow - 0.8ml/min
24.00min flow - 0.45ml/min %B - 100%
25.00min flow - 0.45ml/min %B - 2%
30.00min Equilibrate

Temp : RT

Detection : OPA / FMOC derivatisation

1. L-Aspartic acid
2. L-Glutamic acid
3. Asparagine
4. L-Serine
5. L-Histidine
6. Glycine
7. L-Threonine
8. L-Alanine
9. L-Arginine
10. L-Gly-Tyr
11. L-Tyrosin
12. L-Valine
13. L-Methionine
14. L-Norvalin
15. L-Tryptophan
16. L-Phenylalanine
17. L-Isoleucine
18. L-Ornithine
19. L-Leucine
20. L-Lysine
21. Sarcosin
22. L-Proline

Conclusion

In this application note we show the ability to retain and resolve many of the key amino acids including all 8 amino acids essential to humans. The diverse functionality and polarity of these compounds makes this separation difficult. The use of Fortis H2o here has allowed the retention of polar amino acids and resulted in excellent resolution of difficult to analyse zwiterionic compounds allowing important nutrients to be quantified to ensure wellbeing.