Second Derivative Spectral Identification of Tryptophan and Tyrosine in Peptides

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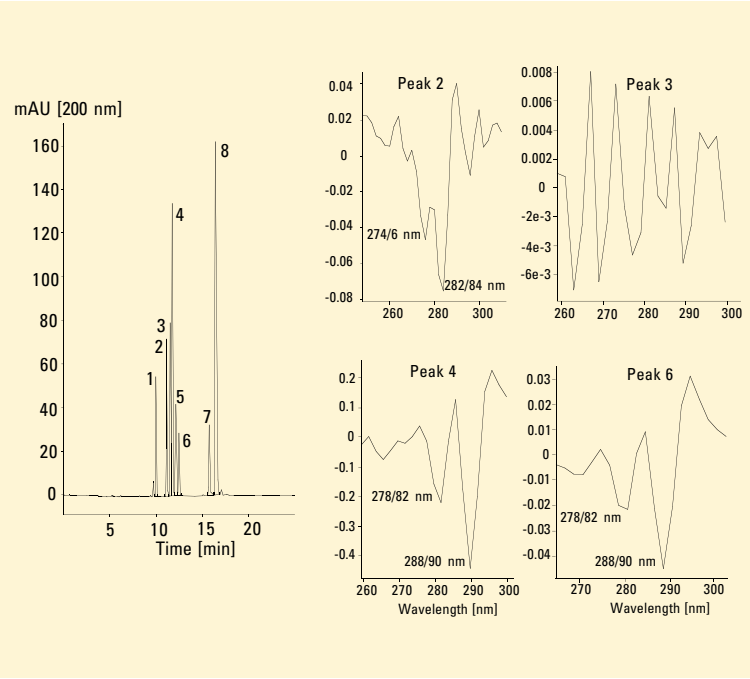
Bioscience

Abstract

Spectra of peaks 2, 3, 4 and 6 were tested for a match with the spectra of tyrosine and tryptophan. Peak 2 was correctly identified to contain only tyrosine, peak 3 contained neither tyrosine nor tryptophan and peaks 4 and 6 contained only tryptophan (figure 1).
Second derivative spectra can be used to emphasize small spectral differences in similar molecules. This is especially useful for identifying tryptophan and tyrosine residues in peptides (figure 2).



Conditions

Buffer
20 mM phosphate, pH 3.0
Sample
tyrosine, tryptophan
Capillary
effective length 72 cm
total length 80.5 cm
internal diameter 75 µm
internal diameter at point of detection is 150 µm
Injection
200 mbars
Temperature
37 °C
Field strength
370 V/cm

Figure 1
Second derivative spectral identification of tryptophan and tyrosine in peptides

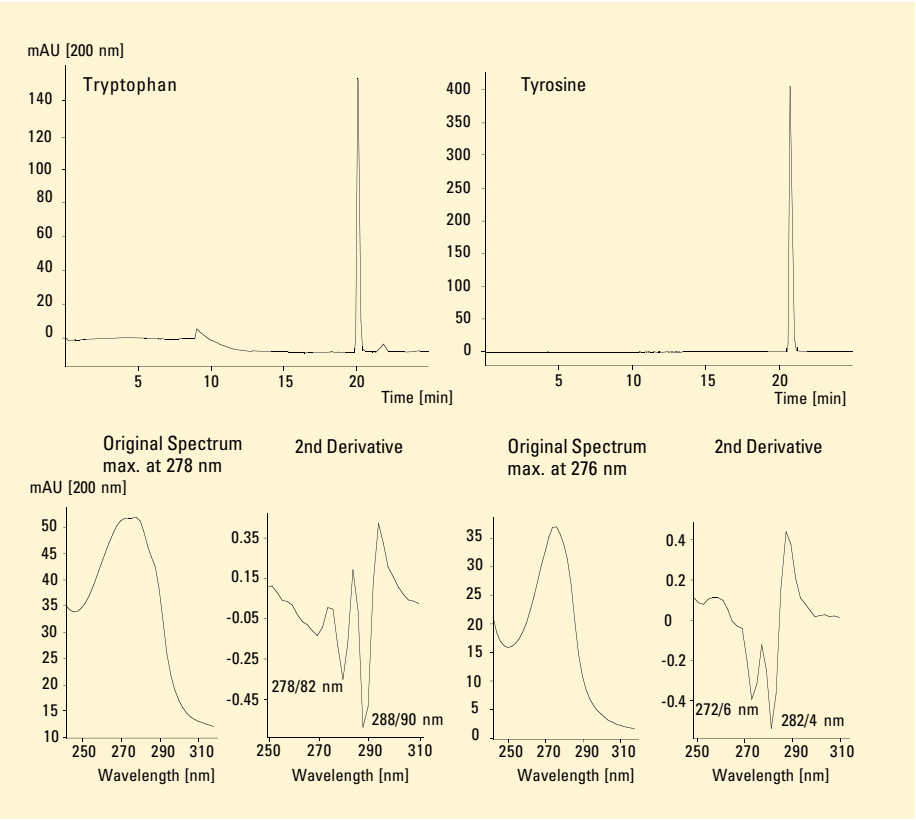


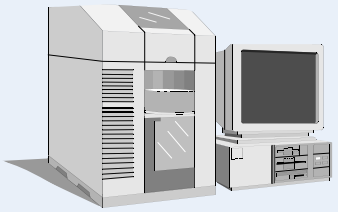
Figure 2
Tryptophan and tyrosine identification using second derivative spectra

Conditions

Buffer
20 mM phosphate, pH 3.0
Sample
tyrosine, tryptophan
Capillary
effective length72 cm
total length 80.5 cm
internal diameter 75 µm
internal diameter at point of detection is 150 µm
Injection
200 mbars
Temperature
37 °C
Field strength
370 V/cm

Equipment

Agilent Capillary Electrophoresis system



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