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Peptide Synthesizer

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SUBJECT: REDUCTION OF METHIONINE SULFOXIDE IN PEPTIDES USING N-METHYLMERCAPTOACETAMIDE (MMA)[1]

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Introduction

The presence of methionine sulfoxide met(o) in peptides containing methionine can be introduced either intentionally with the use of sulfoxide-protected methionine, or unintentionally by oxidation of methionine during synthesis, strong acid cleavage/deprotection, and by prolonged storage and handling. The following procedure is recommended for the reduction of met(o) in peptide containing methionine.

Procedure

1. Prepare Methylmercaptoacetamide (MMA) by reacting ethylmercaptoacetate (50 mL, 0.456 mol) with methylamine (90 mL, 40% aqueous solution, 1.16 mol) at 21°C overnight. Distill the resulting solution at reduced pressure (0.2 mm) and at 71-72°C. The distilled product, stored under N_2, will be a clear viscous liquid at room temperature.
2. Dissolve the peptide in 10% acetic acid to produce a concentration between 1 and 5 mg/mL.

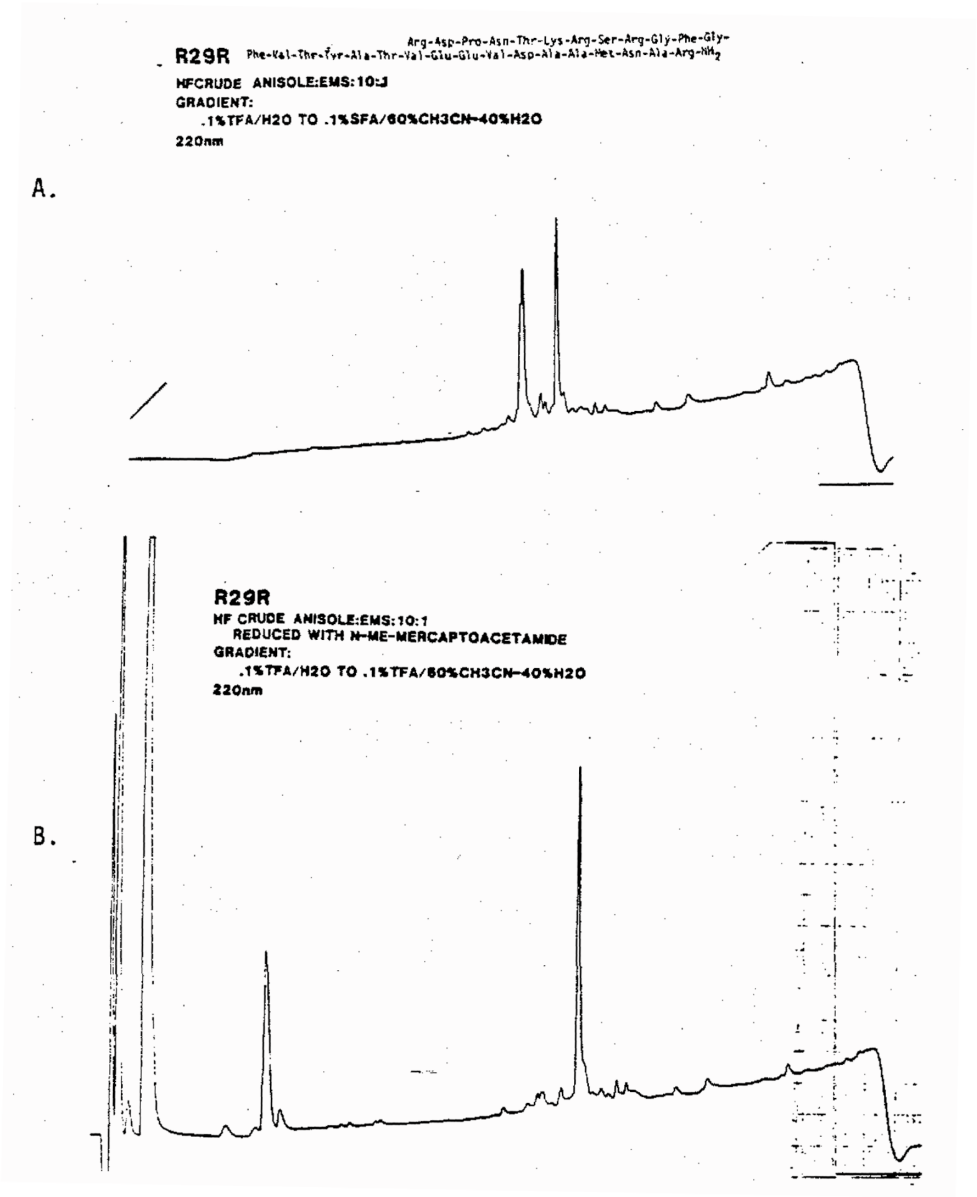

Figure 1. HPLC Profile of R29R.

Profile obtained from the HF cleavage of the peptide resin.

(A) Shows the presence of both the peptide containing met(o) (marked with an asterisk) and the reduced met peptide.

(B) Peptide after reduction with MMA

Reference

1. For a more detailed discussion, see: Houghton, R.A. and Li, C.H., Analytical Biochemistry 98, (1979), 36-46.

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