1. A peptide with 12 amino acids has the composition (not sequence) AspCys2Glu2Leu2Ser2Tyr2Val. It also has Ser as the N-terminal residue and Cys as C-terminal. Partial acid hydrolysis gave these peptide sequences:

SerLeuTyr

TyrCys

LeuTyrGlu

GluLeuGlu

SerValCys

CysSerVal

GluAspTyr

What is the sequence of the original peptide?

1. Oxytocin, a hormone peptide of nine amino acids, is widely used in obstetrics to induce uterine contractions. There is an intramolecular disulfide bond which must be reduced before sequencing. Reduced oxytocin has the composition Asn Cys2 Gln Gly Ile Leu Pro Tyr

Partial hydrolysis of reduced oxytocin led to the following fragments

Asn-Cys

Cys-Tyr

Tyr-Ile-Gln

Cys-Pro-Leu

Ile-Gln

Leu-Gly

Gln-Asn-Cys

Reaction of reduced oxytocin with carboxypeptidase showed glycine as the first liberated amino acid. What is the sequence of oxytocin?

1. An oligopeptide was analyzed. Given the data below, what is its sequence?

AA analysis revealed the composition Asp Asn Glu2 Gly Lys Met2 Phe Pro2

Carboxypeptidase digestion gave the results Gly Asp Met Asn

Sanger N-terminal analysis afforded the DNP derivative of glutamic acid

Treatment of the peptide with cyanogen bromide gave three fragments. Sanger N-terminal analysis of these three fragments gave the DNP derivatives of Glu, Pro, and Asp.

Cleavage of the oligopeptide with trypsin gave two fragments. Sanger analysis of these two fragments both gave the DNP derivative of Glu

Cleavage of the oligopeptide with chymotrypsin gave two fragments. Sanger analysis of these two fragments gave DNP derivatives of Glu and Lys.

What is the sequence?

1. The sequence of a 29 aa long peptide can be determined from the following data.

a) Treatment of the peptide with dansyl chloride reveals that the amino terminal is Val.

b) Trypsin digestion, separation of peptides and Edman degradation give sequences for peptide fragments as follows:

Val-Gly-Ala-His-Ala-Gly-Glu-Tyr-Gly-Ala-Glu-Ala-Thr-Glu

Ala-Ala-Trp-Gly-Lys

Val-Leu-Ser-Pro-Ala-Lys

Thr-Asn-Val-Lys

c) Chymotrypsin digestion, separation of peptides, and Edman degradation give the following sequences for fragments:

Gly-Ala-Glu-Ala-Thr-Glu

Gly-Lys-Val-Gly-Ala-His-Ala-Gly-Glu-Tyr

Val-Leu-Ser-Pro-Ala-Lys-Thr-Asn-Val-Lys-Ala-Ala-Trp

What is the sequence for the peptide?

1. Predict the fragments that will be generated from the treatment of the following peptide with: a) trypsin; b) chymotrypsin; c) and S. aureus V8 protease:

Gly-Ala-Trp-Arg-Asp-Ala-Lys-Glu-Phe-Gly-Gln