Amino Acid Composition of the Fibrinopeptides A and B

JOHN SJÖQUIST

Department of Physiological Chemistry, University of Lund, Lund, Sweden

During the transformation of bovine fibrinogen to fibrin by bovine thrombin at least two peptides (A and B) are released [1,2]. The qualitative amino acid composition of the peptides has been given by Bettelheim [1] after isolation of the peptides by means of electrophoresis and reversed phase partition chromatography. We have published preliminary amino acid analyses, which were performed in connection with structural studies of the peptides [3]. Recently, Gladner *et al.*[4] have analyzed Peptides A and B for their amino acid composition. Differing from our preliminary report, they found Peptide B to contain threonine. However, the presence of threonine was later confirmed in our studies of the amino acid sequence of the peptides [5].

This report deals with the amino acid composition of highly purified fibrinopeptides isolated by the technique of Blombäck and Vestermark [6]. Samples of the peptides (0.5—1 mg) were hydrolyzed in 5.7 N HCl for 22 h at 110°C. The amino acids of the hydrolysates were converted to phenyl thiohydantoin derivatives [7] and quantitatively estimated after separation on paper chromatograms [8].

Table 1 gives the results of these analyses. The figures refer to air-dried samples. The data agree well with those of Bettelheim [1] and Gladner *et al.*[5] Our analyses on performic acid oxidized fibrinopeptides have revealed no cysteine or cystine. Measurements of the tryptophan absorbtion in ultra violet indicate that none is present. No analyses have been performed to determine the amide-N.

The minimum number of amino acid residues in Peptide A is nineteen and that of Peptide B is twentyone. Therefore, the calculated minimum molecular weights of Peptides A and B are 1 890 and 2 460, respectively.

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Table 1.

Amino acid	Peptide A mmoles/100 g peptide			minimum number of residues	Peptide B mmoles/100 g peptide			minimum number of residues
	1st analysis	2nd analysis	mean		1st analysis	2nd analysis	mean	
Alanine	—	—	—	—	37.4	36.8	37.1	1
Arginine	44.5	42.0	43.3	1	75.1	76.0	75.6	2
Aspartic acid	128.2	126.0	127.1	3	142.1	148.0	145.1	4
Glutamic acid	92.5	90.8	91.7	2	105.2	107.0	106.1	3
Glycine	218.0	214.0	216.0	5	104.5	109.9	107.2	3
*Iso*leucine / Leucine	46.8	47.1	47.0	1	35.6	36.1	35.9	1
Lysine	—	—	—	—	33.6	34.4	34.0	1
Phenylalanine	46.0	47.0	46.5	1	35.8	34.5	35.2	1
Proline	92.8	94.3	93.6	2	68.2	70.0	69.1	2
Serine	72.3	70.2	71.3	2	—	—	—	—
Threonine	30.2	32.5	31.4	1	33.5	34.1	33.8	1
Tyrosine	—	—	—	—	34.8	35.0	34.9	1
Valine	47.3	47.1	47.2	1	39.1	38.6	38.9	1
Sum				19				21

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