

THE STRUCTURE OF LACTOSOMATOTROPIC HORMONE

III. THE STRUCTURE OF FRAGMENT E-2 OF LSTH

AND 6-2 OF BOVINE LTH

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From the products of the cleavage of LSTH by cyanogen bromide eight fragments have been isolated which make up the complete molecule of the hormone [1]. The cyanogen bromide fragment E-2 of LSTH differs from the corresponding fragments of ovine lactogenic hormone (O-LTH) and bovine lactogenic hormone (B-LTH) by a smaller content of phenylalanine residues. The present paper gives the results of a study of the structure of the fragments E-2 of LSTH and 6-2 of B-LTH and a comparison of them with the known structure of O-LTH [2].

Fragment 6-2 of B-LTH was obtained by the additional purification by preparative electrophoresis on paper of fraction 6 isolated from the product of the cyanogen bromide cleavage of B-LTH [3]. The fragments were hydrolyzed with trypsin and the resulting peptides were separated by partition chromatography on a column of cellulose. The amino-acid compositions of the peptides were determined on an automatic amino-acid analyzer, and the sequence of the amino acids by mass spectrometry [4] and also by Edman's method in Sjöquist's modification [5] with the identification of the phenylthiohydantoin derivatives of the amino acids. In order to determine the C-terminal amino-acid residues the peptides were incubated with carboxypeptidase B for 1 h. The amino acids split off were determined on an automatic amino-acid analyzer. The results obtained showed the following structures for the peptides: E2T-1 NH₂-Gly-Phe-Ile-Thr-Met-OH; E2T-2 NH₂ Phe-Asp-Glu-Asp-Lys-Arg-OH; E2T-3 NH₂-Tyr-Ala-Glu-Gly-Lys-OH; 6T-1 NH₂-Gly-Phe-Ile-Thr-Met-OH; 6T-2 NH₂-Phe-Asp-Glu-Phe-Asp-Lys-Arg-OH; 6T-3 NH₂-Tyr-Ala-Glu-Gly-Lys-OH.

The peptides E2T-2 and 6T-2 are the N-terminal sections of the fragments, since their N-terminal amino acids coincide with the N-terminal amino acids of the whole fragments. Peptides E2T-1 and 6T-1 containing methionine are C-terminal, and peptides E2T-3 and 6T-3 occupy the central positions in the fragments. The structures of the fragments E-2 of LSTH and 6-2 of B-LTH are given below in comparison with the corresponding sequence of O-LTH:

LSTH Phe-Asp-Glu-Asp-Lys-Arg-Tyr-Ala-Glu-Gly-Lys-Gly-Phe-Ile-Thr-Met

B-LTH Phe-Asp-Glu-Phe-Asp-Lys-Arg-Tyr-Ala-Glu-Gly-Lys-Gly-Phe-Ile-Thr-Met

O-LTH [2] Phe-Asp-Glu-Phe-Asp-Lys-Arg-Tyr-Ala-Glu-Gly-Lys-Gly-Phe-Ile-Thr-Met

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The only difference between the cyanogen bromide fragment of LSTH and the corresponding fragments of the bovine and ovine lactogenic hormones appears in the absence of one phenylalanine residue in the fourth position from the N-end.

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