

DETERMINATION OF THE C-TERMINAL AMINO ACID
RESIDUES OF THE PROTEINS OF THE HORMONES
OF THE HYPOPHYSIS

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TABLE 1. C-Terminal Amino Acids of Some Hormones

Hormone	C-Terminal amino acids	Other amino acids split off by carb-oxypeptidase A
STH	Phenylalanine	Not found
LST	Glycine	Ser, Leu, Ala, Val
LTH	Not found	Not found
phe-LH	Serine	Tyr, Leu, Gly, Ala
threo-LH	Serine	Asp, Tyr, Leu, Ile
FSH	Leucine	Ala, Ser, Tyr, Phe
TSH	Alanine	Leu, Ser, Tyr, Phe

We have determined the C-terminal amino acid residues of a number of protein hormones from bovine hypophyses: somatotropic hormone (STH); lactosomatotropic hormone (LSTH); luteotropic hormone (LTH); thyroid-stimulating hormone (TSH); phe-LH – the phenylalanine hormone; threo-LH – the threonine hormone; and follicle-stimulating hormone (FSH).

The preparations of LSTH, LTH, phe-LH, FSH, and TSH were obtained by extracting the hypophyses with acidified acetone [1] and the preparations of threo-LH and STH by aqueous salt extraction [2]. Further purification was carried out by ion-exchange chromatography and gel filtration.

The C-terminal amino acid residues were determined by a modification of a well-known method [3]. The hormone concerned (0.5–1 mmole) in a 0.02 M solution of ammonium bicarbonate containing dodecyl sulfate was incubated at pH 7.8–8.0 with carboxypeptidase A of the Reanal firm (ratio of enzyme to substrate 1:30) at 37°C. After predetermined intervals of time (10 min–24 h), aliquots were taken, the reaction in the sample was stopped by bringing the pH to 1–2, and the precipitate that had deposited was separated off by centrifuging. The amino acid composition of the supernatant fraction was determined on a Beckman 120C amino acid analyzer.

It can be seen from Table 1 that STH, LSTH, and LTH, which have similar biological properties, differ in their C-terminal amino acid residues. The phe-LH and threo-LH have the same C-terminal residues (serine) but the subsequent amino acid sequences in them are apparently different.

LITERATURE CITED

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