## Isolation of a full-length cDNA clone encoding human tyrosine hydroxylase type 3

Kazuto Kobayashi, Norio Kaneda, Hiroshi Ichinose, Fumio Kishi<sup>1</sup>, Atsushi Nakazawa<sup>1</sup>, Yoshikazu Kurosawa<sup>2</sup>, Keisuke Fujita<sup>2</sup> and Toshiharu Nagatsu\*

Department of Biochemistry, Nagoya University School of Medicine, Nagoya 466, <sup>1</sup>Department of Biochemistry, Yamaguchi University School of Medicine, Ube 755 and <sup>2</sup>Institute for Comprehensive Medical Science, Fujita-Gakuen Health University School of Medicine, Toyoake 470-11, Japan Submitted July 30, 1987 Accession no. Y00414

Grima et al.(1) and we (2) have recently reported the presence of four types of mRNA (type 1, 2, 3 and 4) encoding human tyrosine hydroxylase (TH). Type 2 mRNA contains an insertion of the 12bp sequence in between the 90th and 91st nucleotide of type 1 mRNA. Type 4 mRNA has an additional 81bp sequence after the 12bp sequence of type 2 mRNA. Regarding type 3 mRNA, its 3'-terminal sequence was identical to that after the 91st nucleotide of type 1 mRNA but the reported type 3 cDNA lacked the 5'-terminal region (1). In this report we have isolated a full-length cDNA clone (hTH 2201) corresponding to type 3 from the human pheochromocytoma cDNA library (2). Nucleotide sequence of hTH 2201 cDNA (from nucleotide -13 to 3'-end) indicated that type 3 mRNA was also identical to other three mRNA types in the 5'-terminal sequence and contained an insertion of the 81bp sequence which corresponds to the additional sequence of type 4 mRNA to type 2 (Fig.1). Since human TH is encoded by a single gene (2), these results suggest that alternative splicing produces the four mRNA types, which have insertion/deletion of the 12bp and 81bp sequences, from a sigle primary transcript. This alternative splicing mode is remarkably similar to that producing the four different mRNA types for mouse myelin basic protein (3).



Fig.l Nucleotide sequences and deduced amino acid sequences of 5'-terminal regions of four cDNA types encoding human TH. Arrow indicates the position of insertion.

\*To whom correspondence should be addressed

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