The primary structure of rat secretogranin II deduced from a cDNA sequence

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Secretogranin II (previously also called chromogranin C) is a member of the chromogranins/secretogranins which occur in secretory granules of a wide variety of peptidergic endocrine and neuronal cells (1). As a step towards elucidating the as yet unknown function of secretogranin II, we report here its complete primary structure deduced from sequences of rat secretogranin II cDNA clones. These were isolated from a PC12 cell λgt10 library (kindly donated by Dr. P. Seeburg) by using partial bovine and human secretogranin II cDNAs, obtained after oligonucleotide screening and identified on the basis of peptide sequence homologies (Gerdes et al., unpublished), as probes. Rat pre-secretogranin II is 619 amino acids long, very acidic and hydrophilic, contains nine potential dibasic cleavage sites (Figure, underlined letters) for the generation of smaller, perhaps biologically active peptides, and lacks the disulphide-bonded loop structure conserved in chromogranins A and B (2).

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ACAATATAAGACAGAGGAAAATTTTAAGACATGACTGAATCGAAGGCTTACCGATTTGGAGCAGTTCTGCTTCTTATCCACTTAATTTTCCTTGTCCCTGGAACCGAAGCAGCTTCCTTC   120
                               M  T  E  S  K  A  Y  R  F  G  A  V  L  L  L  I  H  L  I  F  L  V  P  G  T  E  A  A  S  F    -1

CAGCGAAACCAGCTGCTTCAGAAAGAACCAGACCTCAGATTGGAGAATGTCCAGAAGTTTCCTAGTCCAGAAATGATCAGGGCTTTGGAGTACATAGAAAAGCTCAGGCAGCAGGCCCAC   240
 Q  R  N  Q  L  L  Q  K  E  P  D  L  R  L  E  N  V  Q  K  F  P  S  P  E  M  I  R  A  L  E  Y  I  E  K  L  R  Q  Q  A  H    40

AGAGAAGAAAGCAGCCCAGACTACAATCCCTACCAAGGCATCTCTGTTCCCCTTCAACTCAAAGAAAACGGAGAAGAAAGTCACTTGGCAGAGAGCTCAAGGGATGTCCTGAGTGAAGAC   360
 R  E  E  S  S  P  D  Y  N  P  Y  Q  G  I  S  V  P  L  Q  L  K  E  N  G  E  E  S  H  L  A  E  S  S  R  D  V  L  S  E  D    80

GAGTGGATGCGGATAATACTTGAGGCTTTGAGGCAGGCTGAAAATGAGCCGCCATCTGCCCTCAAGGAGAACAAGCCCTATGCCTTGAATCTGGAGAAGAACTTCCCTGTGGACACGCCT   480
 E  W  M  R  I  I  L  E  A  L  R  Q  A  E  N  E  P  P  S  A  L  K  E  N  K  P  Y  A  L  N  L  E  K  N  F  P  V  D  T  P   120

GATGACTATGAGACTCAACAATGGCCTGAGAGGAAACTCAAGCACATGCGGTTCCCTCTCATGTATGAAGAGAATTCCAGGGAAAACCCCTTCAAACGCACAAACGAAATAGTAGAAGAA   600
 D  D  Y  E  T  Q  Q  W  P  E  R  K  L  K  H  M  R  F  P  L  M  Y  E  E  N  S  R  E  N  P  F  K  R  T  N  E  I  V  E  E   160

CAGTACACACCCCAAAGTCTTGCTACCCTGGAGTCTGTGTTCCAAGAGCTTGGGAAACTGACAGGGCCAAGCAACCAGAAGCGTGAGAGGGTTGACGAGGAACAGAAGCTCTACACGGAC   720
 Q  Y  T  P  Q  S  L  A  T  L  E  S  V  F  Q  E  L  G  K  L  T  G  P  S  N  Q  K  R  E  R  V  D  E  E  Q  K  L  Y  T  D   200

GATGAAGATGACGTGTACAAGACCAACAACATTGCCTATGAAGATGTGGTCGGGGGAGAAGACTGGAGTCCTATGGAGGAGAAAATAGAGACTCAAACCCAGGAAGAGGTGAGAGACAGC   840
 D  E  D  D  V  Y  K  T  N  N  I  A  Y  E  D  V  V  G  G  E  D  W  S  P  M  E  E  K  I  E  T  Q  T  Q  E  E  V  R  D  S   240

AAAGAGAACACAGAAAAAAACGAACAAATCAATGAAGAGATGAAACGGTCAGGGCACTTGGGGCTCCCAGATGAAGGTAACCGGAAAGAGAGCAAAGACCAGCTCTCAGAGGACGCCTCC   960
 K  E  N  T  E  K  N  E  Q  I  N  E  E  M  K  R  S  G  H  L  G  L  P  D  E  G  N  R  K  E  S  K  D  Q  L  S  E  D  A  S   280

AAGGTCATCACCTACTTGAGAAGGTTAGTGAATGCTGTGGGCAGTGGGAGGTCCCAGAGTGGGCAAAACGGGGACAGGGCAGCCAGGCTTCTTGAGAGGCCCCTTGATTCTCAGTCTATT  1080
 K  V  I  T  Y  L  R  R  L  V  N  A  V  G  S  G  R  S  Q  S  G  Q  N  G  D  R  A  A  R  L  L  E  R  P  L  D  S  Q  S  I   320

TATCAGCTGATTGAAATCTCCAGGAATTTGCAGATACCCCCTGAAGACTTAATTGAGATGCTCAAAGCTGGGGAGAAACCAAATGGGTTGGTGGAGCCCGAGCAGGATCTGGAGCTTGCT  1200
 Y  Q  L  I  E  I  S  R  N  L  Q  I  P  P  E  D  L  I  E  M  L  K  A  G  E  K  P  N  G  L  V  E  P  E  Q  D  L  E  L  A   360

GTTGACCTAGATGACATCCCGgAAGCTGACAtaGACCGCCCAGACATGTTTCAAAGTAAGACGCTCTCCAAGGGTGGGTATCCCAAGGCACCTGGTCGAGGTATGATGGAGGCCTTGCCA  1320
 V  D  L  D  D  I  P  E  A  D  I  D  R  P  D  M  F  Q  S  K  T  L  S  K  G  G  Y  P  K  A  P  G  R  G  M  M  E  A  L  P   400

GATGGCCTCAGTGTTGAAGACATTTTAAATGTTTTAGGGATGGAGAATGTAGCAAATCAGAAGTCCCCATATTTCCCCAACCAATACAGCCGAGACAAGGCTCTGCTGAGGCTTCCTTAT  1440
 D  G  L  S  V  E  D  I  L  N  V  L  G  M  E  N  V  A  N  Q  K  S  P  Y  F  P  N  Q  Y  S  R  D  K  A  L  L  R  L  P  Y   440

GGTCCTGGGAAATCTAGAGCCAACCAGATTCCCAAAGTAGCCTGGATCCCAGACGTTGAAAGCAGACAAGCCCCCTATGACAATCTGAATGATAAGGACCAAGAATTGGGAGAGTACTTA  1560
 G  P  G  K  S  R  A  N  Q  I  P  K  V  A  W  I  P  D  V  E  S  R  Q  A  P  Y  D  N  L  N  D  K  D  Q  E  L  G  E  Y  L   480

GCCAGGATGCTAGTTAAGTACCCTGAGCTCATGAATACCAACCAGCTGAAGAGAGTGCCCAGCCCAGGCTCCTCAGAAGATGACCTCCAAGAAGAAGAGCAGCTCGAGCAGGCCATCAAG  1680
 A  R  M  L  V  K  Y  P  E  L  M  N  T  N  Q  L  K  R  V  P  S  P  G  S  S  E  D  D  L  Q  E  E  E  Q  L  E  Q  A  I  K   520

GAGCATCTGGGTCAAGGAAGCTCCCAGGAAATGGAGAAACTGGCCAAGGTGAGCAAAAGGATCCCTGCAGGATCCCTGAAGAATGAGGATACCCCAAATAGACAGTACCTGGATGAAGAT  1800
 E  H  L  G  Q  G  S  S  Q  E  M  E  K  L  A  K  V  S  K  R  I  P  A  G  S  L  K  N  E  D  T  P  N  R  Q  Y  L  D  E  D   560

ATGCTCCTGAAAGTGCTAGAGTATCTCAATCAAGAACAGGCAGAGCAGGGAAGGGAACATCTTGCCAAACGGGCCATGGAAAACATGTAAACAGCTTTAATGCCCAATTTCCCTTCTTTT  1920
 M  L  L  K  V  L  E  Y  L  N  Q  E  Q  A  E  Q  G  R  E  H  L  A  K  R  A  M  E  N  M                                   589
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References

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