

Isolation of cloned mouse protein kinase C beta-II cDNA and its sequence

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The cDNA for protein kinase C (PKC) subtypes α (1), β -I (2, 3, 4), β -II (2, 4), γ (1, 4), δ (5), ϵ (3, 5) and ζ (5) have been described for rat, while only the sequence of the α (6, 7) and epsilon (8) subtypes of PKC in mouse have been reported. We have utilized synthetic oligonucleotides based on the sequences of rat PKC- β and rat PKC- γ to isolate cloned cDNA from a commercially available cDNA library made from mouse brain (Promega Corp., Madison, Wisconsin, USA). The nucleotide sequence of the cloned cDNA (Fig. 1) was obtained from two clones (bp 1 to 537 from clone 51-1 and 530 to 2980 from clone 53-1) and assembled as shown by similarity to rat PKC- β -II. The first 2131 nucleotides were 97.0% identical with the corresponding rat PKC- β -II sequence (2). The predicted amino acid sequence varies from the sequence predicted for rat PKC- β -II (2) by only 1 of 673 residues: valine rather than methionine at position 419. However, sequences of rat PKC- β -I and PKC-

β -II that predict the encoding of valine at this position were reported by others (3, 4), and the valine in this position is conserved in the sequences of all other rat PKC isoforms (1, 4, 5) as well as in all published sequences of all isoforms of rabbit, mouse, bovine, and human PKC.

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MetAlaAspProAlaIleGlyProProSerGluGlyGluSerThrValArgPheAlaArg 22
GCCGCCCGGGGCCACCTCTGGGGCTCCCCAGTCCCGCCGCGCCAGATGGCTGACCCGGCTGCGGGCCGCGCCGAGGAGGACACAGTGGCTTCCGCCG 120
LysGlyAlaLeuArgGlnLysAsnValHisGluValLysAsnHisLysPheThrAlaArgPhePheLysGlnProThrPheCysSerHisCysThrAspPheIleTrpGlyPheGlyLys 62
AAAGGGCCCTCCGGCAGAGAACCTGCACGAGGTGAAGACCACAAATTCACCCCGCTTCTCAAGCAGCCACCTCTGCAGCCACTGCACGACTTCATCTGGGGCTTCGGGAAG 240
GlnGlyPheGlnCysGlnValCysCysPheValHisLysArgCysHisGluPheValThrPheSerCysProGlyAlaAspLysGlyProAlaSerAspAspProArgSerLysHis 102
CAGGATTCAGGTGTCAAGTCTGCTGCTTGTGTGTACACAGCGCTGCATGAGTGTCTGCTGCTCTCTCCCGGGTGGGCAAGGGCCCGGCTCTGATGACCCCGAGCAACAC 360
LysPheLysIleHisThrTyrSerSerProThrPheCysAspHisCysGlySerLeuLeuTyrGlyLeuIleHisGlnGlyMetLysCysAspThrCysMetAsnValHisLysArg 142
AAGTTAAGATCCACAGCTACCGACTCTACCTCTCTGACCACTGTGGATCGCTGCTATGGACTTATCCAGGGGATGAATGCCACCTGTATGATGAACCTGCACCAAGCG 480
CysValMetAsnValProSerLeuLysGlyThrAspHisThrGluArgArgGlyArgIleTyrIleGlnIleHisIleAspArgGluValLeuIleValValArgAspAlaLysAsn 182
TGGTGTGAACGTCGCCGCTCTGGGCACTGACACAGGAAAGCGCGGGCCATCTATATCCAGGCCACATCGACAGAGAGTTCATGTTGTGTGAAGATGCTAAAGAT 600
LeuValProMetAspProAsnGlyLeuSerAspProTyrValLysLeuLysLeuIleProAspProLysSerGluSerLysGlnLysThrLysThrIleLysCysSerLeuAspProGlu 222
CTGGTACCTATGGACCCCAATGGCTGTGAGTCCCTACCTAACTGAACCTGATCCCTGATCCCAAAAGTGAGAGCAACAGAGACCAAGCATTCAAGTTCCTCCATCCAGAG 720
TrpAsnGluThrPheArgPheGlnLeuLysGluSerAspLysArgLeuSerValGluIleTrpAspTrpAspLeuThrSerArgAsnAspPheMetGlySerLeuSerPheGly 262
TGGATGAACCTTCAGATTTCCAGTGAAGGAATCAGACAAAGACAGAAAGACTGTCTGTAGAGATCTGGATGGGACTGACAGCAGAAATGACTTCATGGGATCTGCTCATTTGG 840
IleSerGluLeuGlnLysAlaGlyValAspGlyTrpPheLysLeuLeuSerGlnGluGlyGlyLysPheAsnValProValProGluGlySerGluLysGlnGluLeuArg 302
ATTCAGAACTCAGAAAGCCGGTGTGGATGGCTTCAAGTACTAAGCCAGGAGGGTGAATACCTCAATGTGCCCTGCCCGCAAGGAGGCGCAATGAAGACTGCGG 960
GlnLysPheGluArgAlaLysIleGlyGlnGlyThrLysAlaProGluLysThrAlaAsnThrIleSerLysPheAspAsnAsnGlyAsnArgAspArgPheLysLeuThrAspPhe 342
CAGAGTTTGAGAGCCAGATTTGGCCAGGTACTAAGGCTCCAGAGAAAGACAGTAACTATCTCCAAATTTGACCAACTGGCAACAGGGACCGGATGAACGACCGATTTT 1080
AsnPheLeuMetValLeuGlyLysGlySerPheGlyLysValMetLeuSerGluArgLysGlyThrAspGluLeuTyrAlaValLysIleLeuLysLysAspValValIleGlnAsp 382
AATCTCTGATGGTCTGGGAAAGCCAGCTTTGGCAAGTCACTGCTCAGAGCCGAGGGTACAGATGAATCTATGCCGTGAAGATCTGAAGAGGACGCTGGTGAATCAAGTAC 1200
AspValGluCysThrMetValGluLysArgValLeuAlaLeuProGlyLysProPheLeuThrGlnLeuHisSerCysPheGlnThrMetAspArgLeuTyrPheValMetGluTyr 422
GATGTGGAGTGCACATGGTGGAGAGCGGCTGCTGGCTGCTGGGAGGCCCGTCTCTGACTCAGCTCATTCTGCTTCCAGACATGACCCGCTGACTTGTGTGAGGAT 1320
ValAsnGlyLysAspLeuMetTyrHisIleGlnGlnValGlyArgPheLysGluProHisAlaValPheTyrAlaAlaGluIleAlaIleGlyLysPheLeuGlnSerLysGlyIle 462
GTAAAGGGGGTGAACCTCATGACCAATCCAAAGTTCGGCTTCAAGGACCCCATGCTGATTTTACGCCGAGAGATGGCAATGGCTGCTTCTTCTTCTGACAGCAAGGGCATT 1440
IleTyrArgAspLeuLysLeuAspAsnValMetLeuAspSerGluGlyHisIleLysIleAlaAspPheMetCysLysGluAsnIleTrpAspGlyValThrLysThrPheCys 502
ATTACCCGACCTGAAACTGCACACGTGATGCTGGATCTGAGGGCCACATCAAATCCGCTGACTTTGGCTGTAAAGGAACATCTGGATGGGTCGACACCAAGACATCTGT 1560
GlyThrProAspTyrIleAlaProGluIleIleAlaTyrGlnProTyrGlyLysSerValAspTrpAlaPheGlyValLeuLeuTyrGluMetLeuAlaGlyGlnAlaProPheGlu 542
GGCCTCCGGACTACATGCTCCAGATGATCTGCTATCAGCCCTACGGGAAGTCTGGACTGGTGGGCTTTGGAGTCTGCTGTATGAAATGTTGGCTGGCCAGCCGCTTGA 1680
GlyGluAspGluAspGluLeuPheGlnSerIleMetGluHisAsnValAlaTyrProLysSerMetSerLysGluAlaValAlaIleCysLysGlyLeuMetThrLysHisProGlyLys 582
GGGAGGATGAGGATGACTCTCCAGTCAATCATGGAACCAATGTGGCTATCCCAAGTCCATGCTCAAGGAGCCGTGGCAATCTGCAAGGGCTAATGACCAAAACCCAGGCAAG 1800
ArgLeuGlyCysGlyProGluGlyGluArgAspIleLysGluHisAlaPhePheArgTyrIleAspTrpGluLysLeuGluArgLysGluIleGlnProProTyrLysProLysAlaCys 622
CGCTGGGTTGTGGCCCTGAAGGGAAAGACGACATTAAGGACATGCTGTTTCCGGTATATTGACTGGGAAACTGAAACGCAAGGAGATTGACCCACTTATAACCAAAAGCTGT 1920
GlyArgAsnAlaGluAsnPheAspArgPhePheThrArgHisProProValLeuThrProProAspGlnGluIleArgAlaIleAspGlnSerLysPheGluGlyPheVal 2602
GGCCGCAACCTGAAAATTCGACCGGTTTCCACCCGCTCCACGACTCAACACTCTGACCCAGGAAAGTATGACCAATCAGAATTCAGAGGATTTCTTGGT 6040
AsnSerGluPheLeuLysProGluValLysSer 673
AATCTGAAATTTTAAACTGAAGTCAAGGCTAAGTAGATCCGTAGACCTCCGCTCTTCTGTCTCATCAAGCCGACAGCTGTCAATGACATTTTCTTTTCTTCCGCA 2160
GTACATCCGTTTCTTTCTGTGATGAGGCTAGAGTGGCCATGTTTCAGACCCAAATGCTCTCAAGTGTGGAGCATCAAGGAGATGGAATATGACAGTGGCATGAGAAGT 2280
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TTGCTTTTATTTGTCAATCTGGAATGCAGTACATTTGAAATGTAATGTAATCAGGCTCTTTGAGACTGGCTAGATGACCATGTGGTTC 2980

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Figure 1. Nucleotide sequence of mouse brain PKC β -II cDNA.