

Nucleotide sequence of the bovine enteric coronavirus BECV F15 mRNA 5 and mRNA 6 unique regions

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Bovine enteric coronavirus belongs to the monogeneric Coronaviridae family; it induces very severe, often fatal diarrhoea in young calves. Described for the first time in the USA (1) an antigenically different strain F15 was isolated in France (2-3). The complete nucleotide sequence of the BECV F15 genome located between the S and M structural genes has been determined from 4 overlapping cDNA clones. This sequence is 962 nucleotide long. Two main open reading frames (ORF) corresponding to the unique regions of the subgenomic mRNA 5 and mRNA 6 were identified. ORF 5 of 327 nucleotides encodes a polypeptide of 12,807 daltons (NS2); ORF 6 of 252 nucleotides encodes a polypeptide of 9,585 daltons (NS23). NS2 amino acid sequence is 53.2% homologous with 12,400 daltons

(ORF 5a) coronavirus MHV-JHM polypeptide (4) and NS3 amino acid sequence is 61.5% homologous with the 10,200 daltons (ORF 5B) MHV-JHM polypeptide (4). The regions of homology involved in regulating the synthesis of the subgenomic mRNAs 5, 6 and 7 are underlined.

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G TTCGCTCTITGATTTATTGGCTCCTGACGATATATTACATCCCTTCAATCATGTTAAGTTAATTATTATAAGACCCATTCTCDBTCGAGTA      90
TATTATAATAGCTACCACAATGCCTGCTGGTTAGTGGGTACTGTGTCTTATATAACTAGTAAACCTGTAATGCCAATGGTACAACCATTG      180
ATGGTACAGATTATACTAACATTATGCCTAGTACTGTTTCCACAACAGTTTATTTAGGCGGTTCTATAGGTATTGATACTAGCACCCTG      270
GTTTTACCTGTTCTTCCACGGTACTAGTTCCAAAACCATATTATAATTTAGGTAGACCTTATAACTTTAAGCATTAAATTGCCAAAGTTTCT      360
AAGGCCACGCCCTAGTAATGGACATCTGGGAGACCTGAGATTAAATATCTCCGTTATACTAACGGTTTTAATGTCTCAGAATTAGAAGATG      450
ORF 5 > M D I W R P E I K Y L R Y T N G F N V S E L E D      24
CTTGTTTTAAATTTAACTATAAATTTCTAAAGTAGGATATTGTAGAGTTCCTAGTCATGCTGGTCCCGTAATCAAGGTAGCTTTTGTG      540
A C F K F N Y K F P K V G Y C R V P B H A W C R N Q G S F C      54
CTACGCTCACTCTTTATGGCAAATCAAAACATTATGATAAATATTTGGAGTAATAACTGGTTTTACAGCATTGCTAATACTGTAGAGG      630
A T L T L Y G K S K H Y D K Y F G V I T G F T A F A N T V E      84
AGGCTGTTAACAACTGGTTTTCTTAGCTGTTGACTTTATTACCTGGCGGAGACAGGAGTTAAATGTTTATGGCTGATGCTTATTTTGCA      720
E A V N K L V F L A V D F I T W R R Q E L N V Y G *      109
ORF 6 > M F M A D A Y F A      9
GACACTGTGTGGTATGTGGGGCAAATAATTTTATAGTTGCCATTTGTTTATTGGTTATAATAGTTGTAGTGGCATTTTTGGCAACTTTT      810
D T V W Y V G Q I I F I V A I C L L V I I V V V A F L A T F      39
AAATGTGSTATCAACTTTGCGGTATGTGTAATACCTTAGTACTGTCCCCTTCTATTTATGTTTAAATAGAGGTAGGCAGTTTATGAG      900
K L C I Q L C G M C N T L V L S P S I Y V F N R G R Q F Y E      69
TTTTACAATGATGTAAACCACCAAGTCTTGATGTGGATGACGTTTATAGTTAATCAAAACATT      962
F Y N D V K P P V L D V D D V *      84
    
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