Cloning and sequencing of the \( F \) gene of live attenuated Urabe Am9 mumps virus

(Recombinant DNA; vaccine strain; wild-type MpsV virus; cDNA homologies)

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SUMMARY

A cDNA clone encoding the entire \( F \) gene of the live attenuated mumps virus (MpsV) strain, Urabe Am9, has been isolated and sequenced. The \( F \) gene sequence shows significant homology with the one reported for the wild-type MpsV Miyahara strain.

Several strains of attenuated mumps virus (MpsV) have been developed for use in vaccines. The Urabe Am9 strain of attenuated live MpsV (MpsV-Va) is produced either in the amnion of embryonated hen’s eggs or in chick embryo cell cultures (Yamanishi et al., 1970).

MpsV-Va cDNA (Sclavo, Siena, Italy) was obtained by screening a library from mRNA of virally-infected cells with a synthetic probe (5'-GTGGAAGTGTAACGTGTCTAT), corresponding to a fragment of the Miyahara strain (MpsV-M) \( F \) gene. Comparison with the reported sequences of RW (Waxham et al., 1987), SBL-1 (Elliott et al., 1989) and MpsV-M (Takeuchi et al., 1989) strains revealed that the MpsV-Ur strain showed 69 (homology approx. 96%), 101 (homology approx. 94%) and 23 (homology approx. 98%) nt differences corresponding to 12, 24 and 3 aa differences, respectively. It appears that the MpsV-Ur strain is most closely related to the MpsV-M strain, since the three aa substitutions (\( \text{Ala}^2 \rightarrow \text{Val}; \text{Ser}^{10} \rightarrow \text{Gly}; \text{Ile}^{60} \rightarrow \text{Thr} \)) do not represent critical changes (Fig. 1).

REFERENCES


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Abbreviations: aa, amino acid(s); MpsV, mumps virus; MpsV-M, Miyahara strain of MpsV; MpsV-Ur, Urabe Am9 strain of MpsV; nt, nucleotide(s).
Fig. 1. Nucleotide sequence of MpsV F gene and the deduced aa sequence. The presumptive signal sequence of the fusion protein of MpsV-Ur strain is underlined. The likely transmembrane anchoring region is highlighted by a dotted line under the sequence. EMBL accession No. X82887 MVIRFPRO.