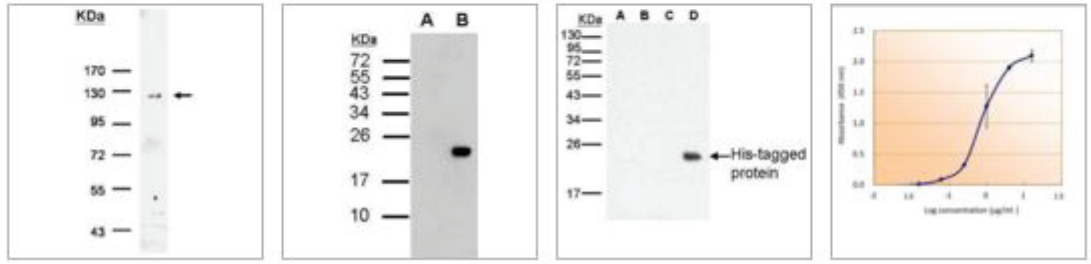
6X His tag antibody

Host / Clonality	Rabbit Polyclonal
Applications	ELISA, IP, WB, IHC-Wm
Species reactivity	Other
★★★☆☆ (1)	Reference (1)



Abstract ▾ Send to: ▾

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Functional analysis of the short isoform of orf virus protein OV20.0.

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Abstract

Orf virus (ORFV) OV20.0L is an ortholog of vaccinia virus (VACV) gene E3L. The function of VACV E3 protein as a virulence factor is well studied, but OV20.0 has received less attention. Here we show that like VACV E3L, OV20.0L encodes two proteins, a full-length protein and a shorter form (sh20). The shorter sh20 is an N-terminally truncated OV20.0 isoform generated when a downstream AUG codon is used for initiating translation. These isoforms differed in cellular localization, with full-length OV20.0 and sh20 found throughout the cell and predominantly in the cytoplasm, respectively. Nonetheless, both OV20.0 isoforms were able to bind double-stranded RNA (dsRNA)-activated protein kinase (PKR) and dsRNA. Moreover, both isoforms strongly inhibited PKR activation as shown by decreased phosphorylation of the translation initiation factor eIF2α subunit and protection of Sindbis virus infection against the activity of interferon (IFN). In spite of this apparent conservation of function in vitro, a recombinant ORFV that was able to express only the sh20 isoform was attenuated in a mouse model.

IMPORTANCE: The OV20.0 protein of orf virus (ORFV) has two isoforms and contributes to virulence, but the roles of the two forms are not known. This study shows that the shorter isoform (sh20) arises due to use of a downstream initiation codon and is amino-terminally truncated. The sh20 form also differs in expression kinetics and cellular localization from full-length OV20.0. Similar to the full-length isoform, sh20 is able to bind dsRNA and PKR, inactivate PKR, and thus act as an antagonist of the interferon response in vitro. In vivo, however, wild-type OV20.0 could not be replaced with sh20 alone without a loss of virulence, suggesting that the functions of the isoforms are not simply redundant.