

## Molecular Characterization of Ovine Herpesvirus 2 Strains Based on Selected Glycoprotein and Tegument Genes

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**Abstract :** Ovine herpesvirus 2 (OvHV-2) genome obtained from the lymphoblastoid cell line of a BJ1035 cow was recently sequenced in the United States of America (USA). Information on the sequences of OvHV-2 genes obtained from South African strains from bovine or other African countries and molecular characterization of OvHV-2 is not documented. Present investigation provides information on the nucleotide and derived amino acid sequences and genetic diversity of Ov 7, Ov 8 ex2, ORF 27 and ORF 73 genes, of these genes from OvHV-2 strains circulating in South Africa. Gene-specific primers were designed and used for PCR of DNA extracted from 42 bovine blood samples that previously tested positive for OvHV-2. The expected PCR products of 495 bp, 253 bp, 890 bp and 1632 bp respectively for Ov 7, Ov 8 ex2, ORF 27 and ORF 73 genes were sequenced and multiple sequence analysis done on the selected regions of the sequenced PCR products. Two genotypes for ORF 27 and ORF 73 gene sequences, and three genotypes for Ov 7 and Ov 8 ex2 gene sequences were identified, and similar groupings for the derived amino acid sequences were obtained for each gene. Nucleotide and amino acid sequence variations that led to the identification of the different genotypes included SNPs, deletions and insertions. Sequence analysis of Ov 7 and ORF 27 genes revealed variations that distinguished between sequences from SA and reference OvHV-2 strains. The implication of geographic origin among SA sequences was difficult to evaluate because of random distribution of genotypes in the different provinces, for each gene. However, socio-economic factors such as migration of people with animals, or transportation of animals for agricultural or business use from one province to another are most likely to be responsible for this observation. The sequence variations observed in this study have no impact on the antibody binding activities of glycoproteins encoded by Ov 7, Ov 8 ex2 and ORF 27 genes, as determined by prediction of the presence of B cell epitopes using BepiPred 1.0. The findings of this study will be used for selection of gene candidates for the development of diagnostic assays and vaccine development as well.

**Keywords :** amino acid, genetic diversity, genes, nucleotide

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