

Evaluation of the inhibitory effect of *Sarcodia suiae* polysaccharides on pseudorabies virus infection

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Abstract

Taiwan, surrounded by the sea, boasts abundant and easily accessible algae resources that are both low-cost and low in toxicity. Certain seaweeds, such as *Sarcodia suiae*, is rich sulfated polysaccharides with antiviral potential against various enveloped viruses. Therefore, this study aims to investigate the inhibitory effect of *S. suiae* polysaccharide extract (SSP) on pseudorabies virus (PRV) infection through in *vitro*. SSP primarily consists of carbohydrates, with a content of 424.7 ± 38.6 mg/g. High-performance liquid chromatography (HPLC) was employed to determine the molecular weight. The analysis revealed that SSP mainly comprises polysaccharide molecules from 90749 to 513314 Da. Fourier-transform infrared spectroscopy (FT-IR) analysis confirmed the presence of various functional groups, including sulfate groups. The results of cell viability assessment using the alamar blue reagent indicated no observed toxicity to PK-15 cells (500, 250, 125, 62.5 $\mu\text{g/mL}$). Cells were treated with SSP at various growth stages, including PRV (Multiplicity of infection (MOI)=0.1) adsorption, entry, and replication. Subsequently, the presence of SSP was detected using real-time quantitative polymerase chain reaction (qPCR). The experimental findings validated that pre- and post-virus infection addition of SSP exhibited the most potent virus-inhibiting effect. These results suggest that SSP possesses antiviral properties against PRV and may serve as a promising adjuvant treatment option in the future.