

PEDv in the literature: Abstract

Porcine epidemic diarrhea virus infection: Inhibition by polysaccharide from *Ginkgo biloba* exocarp and mode of its action

Jung-Hee Lee, Jang-Soon Park, Seung Woong Lee, Seuck-Yeon Hwang, Bae-Eun Young, Hwa-Jung Choi

Porcine epidemic diarrhea virus (PEDV) is the predominant cause of severe entero-pathogenic diarrhea in swine. Until now there is no recorded clinically effective antiviral chemotherapeutic agent for treatment of diseases caused by PEDV. This study aimed to investigate in vitro anti-PEDV effect of polysaccharide from *Ginkgo biloba* exocarp and mode of its action. The polysaccharide exhibited potent antiviral activity against PEDV reducing the formation of a visible CPE [a 50% inhibitory concentration (IC_{50}) = $1.7 \pm 1.3 \mu\text{g/mL}$] compared to positive control ribavirin, and it did not show cytotoxicity at 100 $\mu\text{g/mL}$ [a 50% cytotoxicity concentration (CC_{50}) = 100 $\mu\text{g/mL}$]. Polysaccharide also showed effective inhibitory effects when added at the viral attachment and entry steps. Moreover, polysaccharide effectively inactivated PEDV infection in time-, dose-, and temperature-dependent manners. Overall, this research revealed that polysaccharide could inhibit PEDV infection, and that polysaccharide may be involved in PEDV-Vero cell interactions as the virus attachment and entry to the Vero cells was hindered by the polysaccharide. Therefore, polysaccharide possessing effective inhibitory effect on viral attachment and entry steps of PEDV life cycle is a good candidate for development of antivirals.

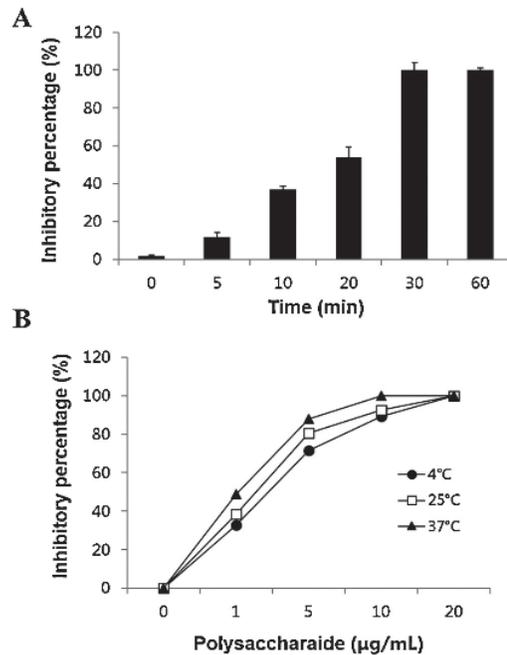


Fig. 3. Time-, Dose- and temperature-dependent inactivation activities of PEDV by polysaccharide. (A) Time-dependent inactivation activity of PEDV by polysaccharide. PEDV was incubated with polysaccharide at a final concentration of 10 $\mu\text{g/mL}$ for 5, 10, 30 and 60 min at 37°C. At the indicated time, the virus-polysaccharide mixtures were diluted and added to Vero cell monolayers. After incubation at 37°C for 1 hr., the cultures were rinsed with complete MEM and replenished with covering layer. (B) Dose- and temperature-dependent inactivation activities of PEDV by polysaccharide. PEDV was incubated with various concentrations of polysaccharide at 4, 25, and 37°C for 1 hr. The virus-polysaccharide mixtures were diluted and added to Vero cell monolayers. After incubation at 37°C for 1 hr., the cultures were rinsed with complete MEM and replenished with covering layer. After cultivation for 48 hrs, the inhibitory effects were determined by CPE reduction assay.