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Antiviral activity of propolis special extract GH 2002 against *Varicella zoster* virus *in vitro*.

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Abstract

Propolis is a generic name for a biological substance produced by bees used for multiple purposes in folk medicine. Propolis special extract GH 2002 is crude propolis highly purified by a special procedure and freed from the accompanying substances like pollen, wax, resins. The cytotoxic and antiherpetic effect of propolis extracts against *Varicella zoster* virus (VZV) was analysed in cell culture, and revealed a moderate cytotoxicity on lung fibroblasts with a CC_{50} of 380 µg/ml. The 50 % inhibitory concentration (IC_{50}) of GH 2002 propolis extract for VZV plaque formation was determined at 64 µg/ml. The propolis extract exhibited high levels of antiviral activity against VZV in viral suspension tests, infectivity was significantly reduced by 93.9 % and a direct concentration-dependent antiviral activity could be demonstrated. In order to determine the mode of virus suppression by propolis, the extract was added at different times during the viral infection cycle. **Addition of propolis to uninfected cells (pre-treatment cells) prior to infection or to infected cells (replication) during intracellular replication had no or only minor effect on virus multiplication. However, propolis exhibited high anti-VZV activity when viruses were pre-treated with propolis prior to infection thus indicating an unspecific interaction between the virus and propolis. The antiviral activity is comparable to acyclovir.**

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