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Laboratory diagnosis and antiviral activity of natural Egyptian products on contagious ecthyma (ORF) viruses isolated from human and animals

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ORF virus of sheep and goats is one of several zoonotic parapoxviruses. Molecular and serological diagnosis of ORF virus provides high sensitivity methods for accurate and rapid diagnosis for ORF virus infection in sheep, goat and human in Egypt. All biopsy samples from human and animals were prepared and inoculated on chorio-allantoic membranes (CAM) of embryonated chicken eggs (ECE) for virus isolation. The isolated viruses were identified and characterized by Enzyme linked immunosorbent assay (ELISA), Fluorescent antibody technique (FAT), electron microscopy (E/M) and polymerase chain reaction (PCR). They gave specific green fluorescence by FAT, micrograph showed ovoid shape particles 290-300×160 nm in diameter very closely similar to references ORF virus by using electron microscopy (E/M). Molecular characterization of isolated viruses by PCR with using (B2L gene) fragments approximately 592 bp which typical as reference ORF virus strains. The ORF viruses isolates showed reduction in virus titer from 6.9 Log₁₀ to 1.5 Log₁₀ EID₅₀/0.2 ml by treatment with *Negilla Sativa* essential oil. The results of exposing the ORF viral isolate to the effect of temperature at 37°C and 56°C / 6hr were showed reduction in the viral isolate titer with variable degrees. Propolis is a natural product extensively used in food and beverages to improve health and to prevent diseases, showing immunomodulatory properties. The antiviral and immunomodulatory effects of propolis extract with parapox virus (PPV) administration to experimental rats. Effect of different propolis extract concentration 1-20% in ECE and experimental rats were found safe, no effect in the nature and color of embryo fluid comparing with control. Water and ethanol propolis extract caused reduction in parapox virus infectivity titer from (10^{5.9} to 10^{-2.9}) and from (10^{-5.62} to 10^{-2.3}) for reference and isolated parapox virus respectively. The group inoculated with propolis without virus showed slightly suppressed cytokines (TNF- α and IFN- γ) in the rats serum when compared to uninoculated rats. Whereas the cytokine production was strongly stimulated and significant increase (t<0.05) in rat sera receiving propolis together with PPV. Pathological, experimentally control positive infected rats with parapox virus without propolis showed signs of the inflammation and swelling at the site of injection and necropsy showed congested liver, spleen and kidneys. Histopathological studies showed acute necrotic hepatitis accompanied with disseminated intravascular coagulopathy (DIC), which is a pathognomonic process. The present study proved that the propolis extract have many effects on the TNF- α and IFN- γ cytokines and humoral immune response may be exploited for the development of effective natural antiviral and immunostimulant uses in human and animals .

Biography

Gamil G S Zeedan obtained PhD, MVSCs and BVSCs in Virology from Cairo University Egypt. Currently, he is an Associate Professor at National Research Center (NRC) – Cairo – Egypt. From 2010- 2013, he worked as an Assistant Professor in the Department of Microbiology and Virology at College of Medicine and Applied Medical sciences. He also worked as an Associate Professor and Head of Clinical laboratory Science Department, College of Applied Medical Science Shaqra University (SU) Saudi. He has published more than 15 papers in reputed journals and has been serving as an Editorial Board Member of reputed.

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