on completion of the observation period after each challenge for standard histological examination and immunolabelling using CD3 (T lymphocytes), CD19 (B lymphocytes) and CD68 (macrophages) antibodies. Tetanus toxoid induced stronger clinical reactions than KLH, whereas aluminum hydroxide induced no clinical reaction. Perivascular mononuclear cell infiltrates, a histopathologic finding consistent with a DTH reaction, were consistently seen after all challenges with tetanus toxoid or KLH, but not with aluminum hydroxide. Immunohistochemistry evidenced the presence of T lymphocytes and macrophages within these infiltrates. These results suggest that tetanus toxoid adjuvanted with aluminum hydroxide can induce a consistent DTH response for use as a model of cell-mediated response in Cynomolgus monkeys.

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Pathogenesis of low pathogenic strain of avian influenza virus H9N2 in chickens fed on diet containing aflatoxins

H.M.F. El Miniawy[1,*], A.A.G. El-Sanousi[2], K.A.A. Ahmed[3], M.M.S.E. Khattab[3]

[1] *Pathology, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt*, [2] *Virology, Faculty of Veterinary Medicine, Giza, Egypt*, [3] *Pathology, Faculty of Veterinar Medicine, Giza, Egypt*

The study was performed to declare the immunosuppressive effect of aflatoxins on the pathogenesis of H9N2 AI virus in SPF chickens. The experiment was carried on 100 unvaccinated one day old broiler SPF chicks. They were divided into four groups of 25 birds each. Group I kept as non treated control; group II intranasal infected with H9N2 AI virus at the 4th week of age; group III fed on diet containing 0.75 ppm aflatoxins from one day old and group IV fed on diet containing 0.75 ppm aflatoxins and infected with H9N2 AI virus at the 4th.week of age. The experiment extended for 27 days from the infection day. Serum was collected from the experimental groups for haemaglutination inhibition technique (HI) and ELISA. Specimens from nasal conchae, trachea, lungs, liver, kidneys, brain, bursa of Fabricious, thymus, spleen and pancreas were collected for histopathology and immunohistochemistry by immunoperoxidase technique. No deaths were recorded throughout the experimental period. The histopathological lesions were more severe and persist till the end of experiment in group IV. The viral antigens of H9N2 AI virus were detected by immunoperoxidase technique in the nasal conchae, trachea, lungs, thymus and kidneys in group II while in group IV it extends to pancreas, brain and bursa of Fabricious, a matter which indicates the dissemination of the virus. The antibodies titer by HI recorded lower values in group IV than in group II which confirms the immunosuppressive effect of aflatoxins.

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Lymphocyte immunophenotyping and t-dependent antibody response in naïve and KLH-challenged juvenile cynomolgus monkeys

A.S. Faqi[1,*], L. Albee[2], J.C. Resendez[1]

[1] *Department Drug Safety Evaluation, MPI Research, Mattawan, USA*, [2] *Immunology, MPI Research, Mattawan, USA*

The developing immune system of children has been identified as a likely target for the adverse effects of xenobiotics. Cynomolgus moneys have become primary test species in developmental toxicity studies especially for biopharmaceuticals. Changes in immune function may be assessed by challenging the animals with Keyhole Limpet Hemocyanin (KLH). Two groups ($n = 2$/sex/group) of juvenile cynomolgus monkeys (6–8 months old) received KLH at a dose level of 5 mg/kg/dose or phosphate buffered saline subcutaneously once on Days 1 and 25, at a dose volume of 0.5 mL/kg/dose. Blood samples (0.5 mL) were collected on Days 1 (prior to KLH administration), 8, 15, 22, 32, 63, 91, 120, 150, and 179. Antiâ€'KLH IgM antibody levels were determined using an ELISA. The overall kinetics of IgM and IgG production, as seen in these experiments, is consistent with the expectations. The mean percentage and absolute cell number of lymphocytes and monocytes in juvenile monkeys over 179 days were generally greater, but not significant in comparison to the adult historical control data. In addition, juvenile animals displayed relative percentages of mature T cells, $CD4^+$ T cells, and $CD8^+$ T cells that were similar to historical control values but displayed higher mean numbers of these cells compared to adult historical control cell numbers. The relative percentage and mean number of B cells in juvenile monkeys were higher throughout the study period. Both the percentage and number of NK cells remained constant over the study intervals and were not significantly different from unimmunized animals.

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Effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin on iron metabolism during bovine Herpesvirus 1 infection

F. Fiorito[1,*], L. De Martino[1], G.E. Granato[2], C. Irace[3], A. Di Pascale[3], C. Maffettone[3], V. Iovane[1], S. Florio[2]

[1] *Pathology and Animal Health, University of Naples, Naples, Italy*, [2] *Structures, Function and Biological Technologies, University of Naples, Naples, Italy*, [3] *Experimental Pharmacology, University of Naples, Naples, Italy*

Iron is essential for living cells as component of prosthetic groups in several enzymes and electron transfer proteins. Bovine Herpesvirus 1 (BHV-1), a dsDNA animal virus, is a pathogen that in cattle can provoke rhinotracheitis and genital disorders. The efficient replication of a DNA-virus is dependent on iron which plays a crucial role in the catalytic center of viral ribonucleotide reductase. Consequently, virus/host interaction and viral infection are influenced by iron status of the host. We previously reported that infection of bovine cells (MDBK) with BHV-1 causes an overall decrease of IRPs RNA-binding activity that results in a simultaneous increase in ferritin content, decrease in transferrin receptor (TfR1) expression and variation in labile iron pool (LIP). Since we recently showed that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) interferes with iron metabolism, and that TCDD enhances BHV-1 replication, herein we analyzed the TCDD effects on iron metabolism during BHV-1 infection in MDBK cells. At different times post infection and in presence of TCDD, we analyzed the RNA-binding activity of the IRPs and the expression of the main proteins involved in iron metabolism. We detected a decrease in IRP1 RNA-binding activity and an increase in IRP2 RNA-binding activity, as well as an increase in levels of both TfR1 and DMT1, and a reduction of ferritin content. These regulations resulted in a significant enhance in the LIP. Our data suggest that BHV-1 infection and TCDD together increase the availability of intracellular free iron that could render the cells more susceptible to viral infection and to oxidative stress.

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