

Peptide digestion and bioassay in mice for detection of *Toxoplasma gondii* in hens from the urban area of Palotina, Paraná, Brazil

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Toxoplasma gondii is a protozoan of the *Apicomplexa* Phylum, worldwide known for its high zoonotic potential. In humans, it mainly affects immunocompromised and pregnant individuals, leading to neonatal changes. Birds in general act as important intermediate hosts in the transmission route for animals and humans. The aim of this work was to isolate and verify the pathogenic potential of *Toxoplasma gondii* in hens from the urban area of Palotina city. Fifteen hens from random farms located in the urban area were obtained for this purpose. Blood samples were collected and centrifuged to obtain serum and further Indirect Immunofluorescence Reaction (IFR), then all birds, even those considered seronegative, were submitted to euthanasia; then, brain and heart were collected, which were used for peptic digestion of tissues and bioassay in mice. The mice were divided into groups, where five animals were used for the samples coming from each bird. Brain and lung of all mice from the bioassay were submitted to the Polymerase Chain Reaction (PCR) technique. From the analyzed serum samples, 73.33% (11/15) of the chickens were positive in the IFAT with the antibody titers ranging from 16 to 1024, considering as cutoff the 1:16 dilution. Most serums were positive at the 1: 256 dilution, with 63.63%. In the bioassay, of the 75 inoculated mice, 28 (37.3%) died before the end of the 60-day period, where clinical manifestations suggestive of toxoplasmosis such as ascites, shivering hair, weakness and conjunctivitis were observed. Through imprinting of the lung, it was observed tachyzoites in all samples. All mice infected with tissues from four distinct chickens died due to acute toxoplasmosis between 12 and 22 days after inoculation, suggesting a high virulence of the strain. The presence of tissue cyst, indicating chronic infection, through brain imprinting was detected in 6 mice of 3 distinct birds after the end of the inoculation period. In the PCR, a positivity of 80% (12/15) was found. The results demonstrate a high occurrence of *T. gondii* in Palotina, representing a risk of infection for humans and other animals. Through the bioassay technique, it was observed that the protozoan is present, viable, and with a high pathogenicity, infectivity and virulence, demonstrated by the high mortality rate of mice resulting from acute infection.

Key words: bioassay, toxoplasmosis, birds, RIFI, PCR