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## Serodiagnosis of tuberculosis: Specific detection of antibodies against the Ag85C-MPT51-HspX fusion protein (CMX)

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Tuberculosis (TB) is a major cause of the global infectious disease-related morbidity and mortality. In 2014, 9.6 million new TB cases were estimated throughout the world, among which 1.5 million deaths occurred due to the infection. In the same year, the incidence of TB in Brazil was 44 cases per 100,000 inhabitants, placing Brazil 16<sup>th</sup> among the 22 countries comprising 80% of TB cases in the worldwide. The development of new tools for rapid and accurate diagnosis of active pulmonary TB is considered by many countries to be a strategy for controlling the disease. The aim of this study was to apply the enzyme-linked immunosorbent assay (ELISA) for measuring anti-CMX IgM antibodies in individuals with active pulmonary TB and healthy controls in an area endemic for TB. Analysis of the clinical signs and symptoms showed that most individuals with active pulmonary TB more frequently presented with a cough (94.7%), weight loss (83.4%), and, to a lesser extent, hemoptysis (37%). In addition, we evaluated the tests that were used to diagnose TB. The chest X-ray (100%) and sputum smear microscopy (80%) were the most frequently used tests for diagnosis; in contrast, only 33% of patients underwent computerized tomography, and microbiological culture was performed for 12%. Patients with active pulmonary TB had higher titers of anti-CMX IgM antibodies (optical density (OD=0.502±0.281; p=0.0001) than healthy controls (OD=0.200±0.125). The cut-off for IgM-ELISA was determined using ROC curve analysis (AUC=0.868) with a sensitivity of 80.1% and a specificity of 78.2%. These results suggest that the recombinant protein CMX can be used as a serological marker for screening individuals suspected of having active pulmonary TB.

## **Biography**

Eduardo Martins de Sousa holds a Bachelor's degree in Biomedicine, a Master's degree in Tropical Medicine (Immunology) from the Institute of Tropical Pathology and Public Health of the Federal Goiás University. He has obtained his PhD degree in Tropical Medicine (Immunology) from the Institute of Tropical Pathology and Public Health of the Goiás Federal University, being part of a Sandwich Doctorate held at the Institute of Molecular and Cellular Biology of the University of Porto, Portugal. Currently, he is a Professor of the Post-graduate program in Parasite Biology (Master's degree) at the University Center of Maranhão (UNICEUMA). He is an Associate Professor of Post-Graduate program in Biodiversity and Biotechnology of the Bionorte Network (PPG-BIONORTE) (Doctoral level). He has experience in Immunology, with emphasis in Applied Immunology, working mainly on the following topics: *Mycobacterium tuberculosis*, *Mycobacterium massiliense*, ELISA, experimental infection, vaccine, flow cytometry, real-time PCR and mice.

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