# In Silico Identification of Novel Immunogenic Secreted Proteins of Mycoplasma bovis from Secretome Data and Experimental Verification

**Ihsanullah Shirani**
Para-Clinic Department, Faculty of Veterinary Medicine, Nangarhar University, Afghanistan.

## Abstract

Mycoplasma bovis is a major pathogen, responsible for bovine respiratory diseases worldwide. The present lack of effective control measures leaves cattle owners at considerable perpetual risk of M. bovis outbreaks. In this study, we identified M. bovis secreted immunogenic proteins in silico as potential candidates for novel diagnostic agents and vaccines. We used immunoinformatics to analyze 438 M. bovis proteins previously identified with a label-free proteomics analysis of virulent M. bovis HB0801 (P1) and its attenuated P150 strains. The subcellular localization of these proteins was preliminarily screened and 59 proteins were found to be secreted extracellular proteins. Twenty-seven of these proteins contained a large number of predictive T-cell epitopes presented by major histocompatibility complex (MHC) class I and II molecules. Twenty-two of these 27 proteins had a high number of conformational B-cell epitopes, predicted from the corresponding 3D structural templates, including one unique to P1, two unique to P150, and 19 common to both strains. Five proteins were selected for further validation, and two of these, MbovP274 and MbovP570, were successfully expressed and purified. Both were confirmed to be secretory and highly immunogenic proteins that induced a mouse antibody response, reacted with cattle serum positive for M. bovis infection, and significantly increased the production of interleukin 8 (IL-8), IL-12 and interferon γ(IFN-γ) during the secretion of these three cytokines by both M. bovis mutants of these genes. These results should be useful in the development of novel immunological agents against M. bovis infection.

## Biography:-

Ihsanullah Shiraniis a M.Sc. 20017-2020, majoring in Preventive veterinary Medicine at College of Veterinary Medicine, Huazhong Agricultural University, Wuhan, China. Bachelor degree 2007-2012, at College of Veterinary Medicine and Animal Science, Nangarhar University, Jalalabad, Afghanistan.

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