

TITLE: ANTIGENIC CHARACTERIZATION OF *MORAXELLA BOVIS*, *MORAXELLA BOVOCULI* AND *MORAXELLA OVIS* STRAINS WITH POTENTIAL USE IN VACCINES

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ABSTRACT:

Moraxella bovis is historically known as the primary agent of infectious bovine keratoconjunctivitis (IBK), which is considered the most common and economically important ocular disease in cattle worldwide. However, *Moraxella bovoculi* and *Moraxella ovis* are also reported to be involved in the pathogenesis of IBK. Vaccination is the main preventive strategy for IBK, but the current commercial vaccines available are basically composed by whole body cell or purified fimbriae from *M. bovis*, exclusively. Therefore, these three species should be included in the development of a new vaccine with a broad-spectrum protection against the disease natural challenge. In this study we investigated the antigenic properties of clinical isolates and reference strains of *M. bovis*, *M. bovoculi* and *M. ovis* using a novel in vitro approach for vaccine evaluation based on two techniques, flow cytometry and western blotting (WB). Here, we demonstrated that rabbit antisera produced against reference *M. bovis* strain and commercial bacterin showed low number of IgG with capacity to recognize a panel of heterologous strains composed by *M. bovoculi* and *M. ovis*. On the other hand, the antisera generated against two clinical isolates of *M. ovis* (Mov2 and Mov3) presented high cross-reactivity levels against all *M. ovis* and *M. bovis* strains evaluated. Similarly, the antisera against Mbv3 (clinical isolate of *M. bovoculi*) had high levels of IgG associated on the surface of all *M. bovoculi* strains and most of the *M. ovis* strains analyzed. The WB analysis demonstrated that *Moraxella* spp. has multiple immunogenic antigens and most of them are shared between the three species. Based on the cross-reactivity analysis and considering the number of IgG associated on the bacterial surface, we suggest that a three-valent vaccine formulated with Mbv3, Mov2 and Mov3 strains may provide a stronger and broader protection than the current monovalent vaccines available against IBK.

Keywords: cross-reactivity, *M. bovis*, *M. bovoculi*, *M. ovis*, IBK, flow cytometry

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