POTENT CROSS-REACTIVE NEUTRALIZING MONOCLONAL ANTIBODIES AGAINST LEPTOSPIRA INTERROGANS INFECTION TO VERO CELLS

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Abstract

**Background:** The antibody response is considered to be the protective immunity against leptospirosis. Therefore, the broadly protective antibody against heterologous serovars has increase major focus for a new vaccine to prevention of leptospirosis. The objective of this study is to evaluate the ability of the broadly specific monoclonal antibodies (MAbs) to neutralize L. interrogans serovars Autumnalis, Bataviae and Pyrogenes which commonly cause leptospirosis in Thailand.

**Methods:** Three serogroup specific and three broadly reactive MAbs against leptospires were produced by immunizing BALB/C mice with formalin killed whole cell antigens. The specificity of the MAbs was tested by an indirect enzyme linked immunosorbant assay (ELISA) and microscopic agglutination test (MAT) using a panel of both pathogenic and saprophytic leptospires and other bacteria. Neutralization activity of the MAbs with the different serovars was conducted on Vero cell line. The infection of the cells was assayed by flow cytometry.

**Results:** The three serogroup specific MAbs against L. interrogans serovars Autumnalis, Bataviae and Pyrogenes are named M1, M2 and M3 respectively. The three broadly reactive antibodies are named, M4, M5 and M6. The specific epitopes recognized by all antibodies, except M6, were carbohydrate on LPS. The M6 antibody was specific to the 38 kDa protein. The broadly reactive MAbs, M4, M5 and M6 showed different protection to the leptospira infection. The M6 MAb was the most effective antibody to neutralize all tested leptospires.

**Conclusions:** The M6, the broadly reactive monoclonal antibody against the 38 kDa protein, confers cross-protective against a wide range of pathogenic Leptospira serovars. This antibody may be useful in new approach for vaccine development.

**Keywords:** Leptospirosis, neutralization.