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Establishment of antigenic protein expression system in acid fast mycobacteria and purification technique of the expressed protein.
抗酸菌での抗原性タンパク質の発現と精製技術

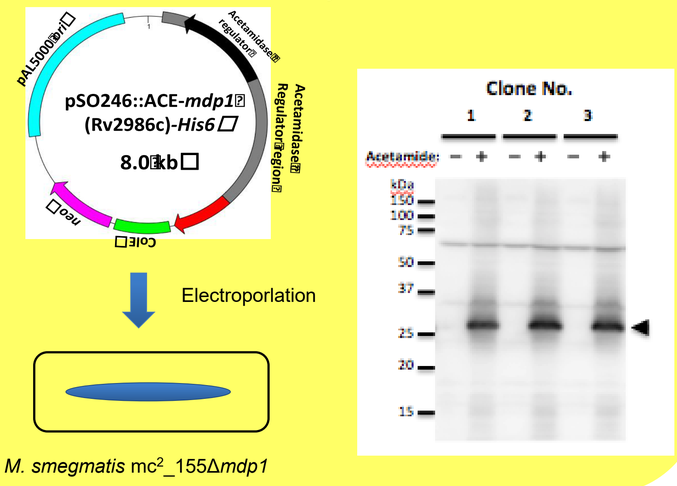
【Keywords】

Tuberculosis	Vaccine	MDP1	Protein expression system in acid fast bacteria	Protein purification

■Summary

Mycobacterium tuberculosis causes a leading death among single infectious agents worldwide. Development of new vaccine against tuberculosis and more accurate diagnostic methods are argent need. We have established antigenic protein expression and purification system in mycobacteria. The purified protein by this system is more immunogenic than that obtained by conventional *E. coli* system, suggesting its usefulness for production of vaccine and immune response-based diagnostic components.

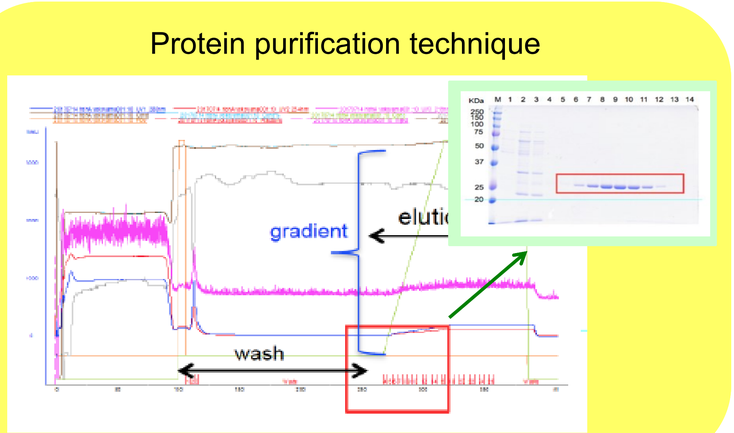
Construction of protein expression system in acid fast mycobacteria.



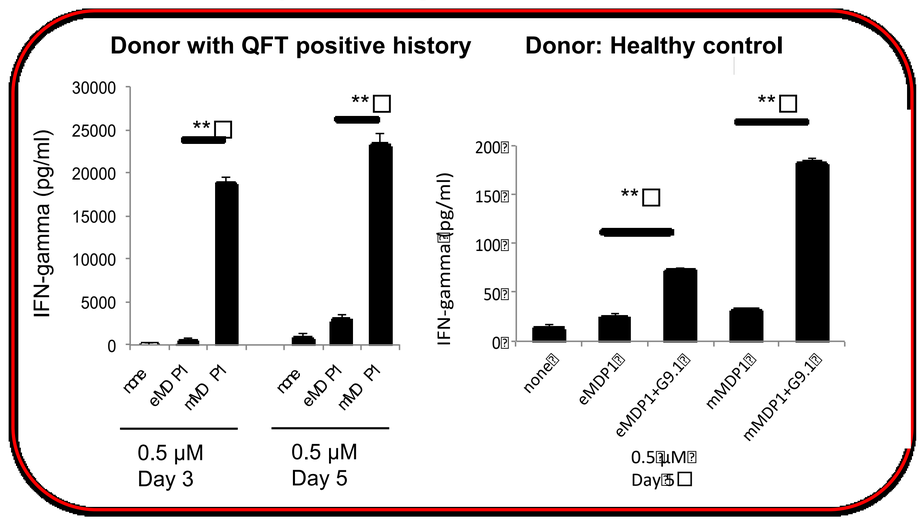
■Subject Details/Topic

We established antigenic protein expression system in rapid growing acid fast bacteria, *Mycobacterium smegmatis* and purification technique of expressed protein. One of antigenic proteins, MDP1 (Mycobacterial DNA-binding Protein 1) obtained by this system (mMDP1), activated human PBMC from BCG-vaccinated donors stronger than MDP1 obtained from conventional *E. coli* expressing system (eMDP1). These techniques is useful for production of immunogenic protein for vaccine development and diagnostic use against TB.

Protein purification technique



The advantage of mMDP1 in IFN-gamma production from PBMC. G9.1 as adjuvant augments it's production.

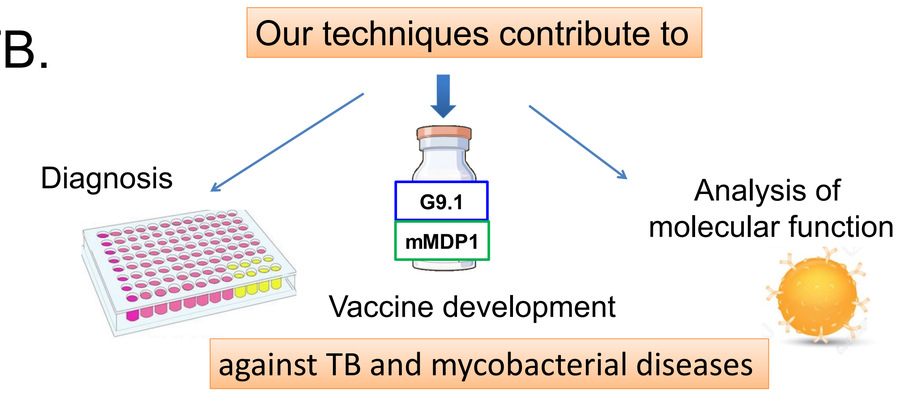


○Advantages

1. mMDP1 possesses post translational modification which eMDP1 does not. Our technique enables to obtain antigens with molecular function unique to acid fast bacteria.
2. mMDP1 activates protective immunity stronger than eMDP1.
3. No LPS removal required.

○Applications

The antigenic proteins obtained by our expression system and purification technique are expected to be useful for vaccine development, analysis of molecular function, and diagnosis against TB.



○Plans

Component vaccine development against tuberculosis.
Diagnostic antigen preparation of mycobacterial diseases.
Verify the effectiveness of mMDP1 in primates close to the human.

■We hope to collaborate with…

The manufacturer of mycobacterial protein by GMP.

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