MEDICAL & BIOLOGICAL LABORATORIES CO., LTD.

Press Release

Generation of fully human monoclonal antibodies neutralizing influenza virus
- Use of SPYMEG as a novel human lymphocyte fusion partner -

Nagoya, Japan, January 12, 2010 - Medical & Biological Laboratories, Co., Ltd. (MBL) and with the collaboration of Osaka University, have successfully generated several fully human monoclonal antibodies against pandemic A (H1N1 and H3N2) type influenza virus by utilization of the blood from volunteers who were inoculated with influenza vaccine.

Professor Kazuyoshi Ikuta at the Department of Virology, Research Institute for Microbial Diseases, Osaka University, has confirmed through *in vitro* experiments that the generated fully human antibodies can neutralize H3N2 influenza virus strains broadly, and is now evaluating the prophylactic and therapeutic effects in an infected mouse model. "After completion of *in vivo* experiments in infected animal models with the neutralizing antibodies including second panel of antibodies, MBL plans to commence a collaborative clinical development program with a pharmaceutical company. These neutralizing antibodies (human IgG) against the influenza virus are expected to be effective in severe infections, and have further potential in combination with anti-viral drugs and result in efficacious treatment with anti-viral drugs where resistance to these agents occurs.

SPYMEG, as a novel human lymphocyte fusion partner used in this research, was co-developed by Associate Professor Naomasa Yamamoto at Ohu University and MBL. SPYMEG is the cell line established by cell fusion of MEG-01 with a murine myeloma cell line, and overcomes human chromosome deletion which human lymphocyte-origin hybridomas are always associated with. Therefore, a higher reliability of cell fusion makes it possible to establish more, stable antibody-producing hybridomas. Utilization of SPYMEG is a simpler and easier way to generate therapeutic monoclonal antibodies than chimerization or humanization of mouse monoclonal antibodies generated from immunized mice.

At present, MBL is doing a collaborative research to generate the neutralizing monoclonal antibodies against swine-origin influenza A (H1N1). Further collaboration plans on other infectious viruses with domestic or foreign public institutions are in preparation.

Since the fully human antibodies generated by utilization of SPYMEG originate from the convalescent volunteer’s blood recovering from influenza infection or vaccination, they are considered to be not only effective but also very safe. Additionally, the simple principle and wide range of application of this method will lead to the generation of therapeutic and prophylactic drugs to various infections such as avian influenza A (H5N1).

Reference

- Biochemical and Biophysical Research Communications 387 (2009) 180–185

Glossary

- Fully human antibody: Recent therapeutic monoclonal antibodies, either of a chimeric, humanized or fully human antibody have been developed. The human amino acid sequence content of chimeric and humanized antibodies is approximately 66% and 90%, respectively. However, the fully human monoclonal antibody is constructed with 100% of human gene sequence, and is considered to be a much safer and less antigenic agent.
- Neutralizing activity: This means the activity that the antibody binds to membrane protein on the influenza virus surface and inhibits entering of the virus particle into human host cell. Anti-influenza agents suppress the growth of the virus through inhibiting the release of newly formed viral particles from infected cells.

Medical & Biological Laboratories, Co., Ltd. (MBL)

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MBL was first established as a Japanese antibody manufacturer in 1969. Since then, the company has been involved in the research, development, manufacture and sale of diagnostic and research reagents.

In the research reagent sector, MBL has been engaged in, not only the worldwide sales of more than 8,000 antibodies that are developed in-house or marketed by foreign and domestic alliance partners, but also the contract manufacturing of custom-made monoclonal and polyclonal antibodies. In addition, the company has extended its business to sales of identification kits for mRNA, synthesis of oligonucleotides and artificial genes, and contract analysis of carbohydrate structure.

In the diagnostic reagent sector, MBL has developed *in vitro* diagnostic reagents for autoimmune diseases, cancers and aberrant metabolite disorders. Especially, in the diagnostic field of autoimmune diseases, the company, as the leading maker in Japan, has expanded its product line, and contributed to diagnosis of diseases characterized as having less than optimal therapeutic options. In the cytological diagnosis sector, the company sells an advanced cytopreparation system and sampling brushes for cytology for the diagnosis of cervical cancer.

MBL also takes full advantage of the benefits of being an antibody manufacturer with commitment to a drug discovery program focused on therapeutic monoclonal antibodies.