I. INTRODUCTION

The immune system is a system to protect humans and animals from numerous potential pathogens which are present in the environment. The basis of immunity is the immune system's ability to recognize foreign molecules (antigen) and react to them, while at the same time tolerant to the body's own tissues (Male et al., 1987). The immune system consists of a number of organs that work together with several different cell types. The very important cells of the immune system are leukocytes, which arise from pluripotent stem cells through two main lines of differentiation, the lymphoid lineage producing lymphocytes and the myeloid lineage producing phagocytes (monocytes and neutrophils), as well as red blood cells (Roitt et al., 1989).

Leukocytes express a large number of different molecules on their surfaces called leukocyte surface antigen. Some of these appear at particular stages of cell differentiation or activation for a short period, while others are characteristic of different cell lineages (Roitt et al., 1989). Some groups of these molecules function as adhesion type in cell-cell interaction, while others act as cytokine and ligand receptor. These interactions cause the communication between these cells. Both cell-cell and ligand-receptor interactions lead to the signal transduction into cells, which are finally activated to make up the immune system.

During the last 20 years, a variety of leukocyte surface molecules have been identified, characterized, and cloned. This development was initiated mainly through the introduction of the monoclonal antibody technology by Köhler and Milstein in 1975, and the categorization of monoclonal antibodies raised against leukocyte surface structures in clusters of differentiation (CD). These CD monoclonal antibodies are, today, responsible for the rapidly developing picture of the interaction of immune cells during an immune and inflammatory responses, and the ontogeny of the haematopoietic system. They are also invaluable in the diagnosis of diseases and disorders of the immune system, including leukemia, lymphomas and the human immunodeficiency virus, as well as for understanding the therapeutic influence of immune reactions (Stockinger et al., 1996).

The M6 molecule is a leukocyte surface molecule, which expresses broadly on haematopoietic cell lines, including T cell lines, B cell lines, myeloid cell lines, and erythro-myeloid cell lines (Kasinrerk et al., 1992). It is not significantly expressed on freshly isolated lymphocytes, however, it appears on 3 day PHA activated T lymphocytes (Kasinrerk et al.,

1992). Recently, cDNA encoding M6 protein were cloned and from the amino acid sequence of M6 molecule suggested that M6 is an integral membrane protein that has a special feature: in the transmembrane region, there is a glutamic acid, which is an acidic amino acid located between hydrophobic amino acids. This is rarely found in common membrane proteins as this special feature protein usually associate with other proteins and function as a signal transduction molecules, for example; T cell receptor-CD3 complex, and CD16 (FcRIII) molecule. M6 antigen is a member of the immunoglobulin superfamily, in the extracellular region, it is formed into 2 immunoglobulin like domains. Amino acid sequence comparison between M6 and reported molecules indicated that domain 1 of M6 molecule also bears substantial relatedness to domain 3 of the human interleukin 1 receptor. The previously mentioned special features of M6 molecule, and it is a lymphocyte activation molecule, and the fact that they are found on haematopoietic cell lines, indicated that M6 molecule may function as a signal transduction molecule or growth factor receptor, which has not been reported before. It could act as a molecule which controls the proliferation of cancer cells.

Studying the function of neo leukocyte surface molecules will lead to a better understanding of the working process of the immune system, mechanisms and pathogenicity of diseases and may lead to understand the differentiation of cancer cells. Finally, the knowledges may become applicable for diagnosis and curing of the diseases. To study the function of M6 molecule in this study, the monoclonal antibodies were initially generated against M6 molecule. These monoclonal antibodies were then used for functional analysis of M6 molecule.

Aim of this study

1. Production of monoclonal antibodies against the M6 molecule.
2. Cellular expression study of M6 molecule on peripheral blood leukocytes, activated lymphocytes and haematopoietic cell lines.
3. Functional analysis of M6 molecule that are involved in cell proliferation.