

Production and characterization of a murine monoclonal antibody recognizing a conformational epitope on hCG

A.A. Sabooryaraghi(Ph.D. Student)¹, R. Ghods (M.Sc.)², F.Shokri (Ph.D.)³

1- Ph.D. Student of Department of Biochemistry, Medical Faculty, Tarbiat Modarres University, Tehran, Iran.

2- Department of Immunology, Faculty of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

3- Associate Professor, Department of Immunology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Human chorionic gonadotropin hormone (hCG) belongs to glycoprotein hormones family. Other members of this family include follicle stimulating hormone (FSH), luteinizing hormone (LH) and thyroid stimulating hormone (TSH). All these hormones consist of a common alpha and a distinct beta subunit. There is a strong similarity between the members of these hormones. Therefore, detection and quantitative measurement of these hormones require production of monoclonal antibodies specific for non-overlapping epitopes on the beta chain or a conformational epitope specific for each hormone. In this study a murine monoclonal antibody against the hCG dimer molecule was produced by hybridoma technology. The specificity of the antibody was assessed by ELISA and Immunoblotting using a panel of highly purified and recombinant forms of glycoprotein hormones including: native hCG and hLH, recombinant hCG, β hCG, hCG α , β hCG carboxyl terminal peptide covering amino acid residues 109-145 (β hCG-CTP), recombinant TSH and native FSH, as well as urine proteins (UP). It was found that the monoclonal antibody reacted with, dimer recombinant and urine purified hCG and hLH, but not with the reduced form of the hormone, nor with recombinant β hCG, α hCG, TSH, native FSH and UP. Using β hCG-CTP fragment with different concentrations to monitor inhibition of hormone – monoclonal antibody interactions, no interference was observed. This implies that the epitope recognized by the monoclonal antibody is different from that presented by β hCG-CTP. These results suggest that the monoclonal antibody recognizes a conformational epitope located at the dimer form of hCG molecule and closely associated with the beta subunit of the hormone.

Keywords: Glycoprotein hormones, HCG, Monoclonal antibody, Epitope mapping

Corresponding address: Dr. Shokri F, Department, of Immunology, Faculty of Public Health, Tehran University of Medical Sciences, Tehran, Iran.