ANALYSIS OF MAREK'S DISEASE VIRUS SEROTYPE 1-SPECIFIC, SEROTYPE 2-SPECIFIC AND CROSS-REACTIVE POLYPEPTIDES IN VIRUS-INFECTED CELLS

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Strains of Marek's disease virus (MDV) and herpesvirus of turkeys (HVT) have been divided into three serotypes on the basis of serological analysis. Because of the non-pathogenic character of serotype 2 virus (MDV2), the antigenic relationship between serotype 1 virus (MDV1) and MDV2 is of great interest in relation to the oncogenicity of MDV. The object of the present study is to analyze serotype-specific and cross-reactive proteins from cells infected with MDV1 or MDV2. For this purpose, a total of twenty-four antibody-secreting hybridoma cells against CV1-988 or HPRS-24 were established, and they were divided into eight groups based on the results of immunofluorescence assay (FA) and immunoprecipitation analysis.

Monoclonal antibodies (MAbs) belonging to group 1 immunoprecipitated 4 virus-specific polypeptides with molecular weight (Mw.) of 65K, 43K, 14K and 12K from MDV1-infected cells and 63K, 43K, 14K and 12K from MDV2-infected cells. These polypeptides possess an antigenic determinant related to virus neutralization.

MAbs classified into group 2 recognized late membrane antigen and precipitated a 29/34K glycoprotein from CV1-988-infected cells and MDV2-infected cells. Since the 29/34K component was not identified in Md/5 and JM-infected cells, this glycoprotein may be specific to mildly pathogenic and non-pathogenic MDV.

MAbs classified into group 3 precipitated 82K and 39K polypeptides from MDV1-infected cells. The 82K polypeptide possesses both serotype-specific and cross-reactive determinants.

Group 4 MAbs recoginzed MDV2-specific polypeptides with Mw. of 37K, 33K and 31K from HPRS-24-infected cells. The antigen identified by these MAbs may be related to early membrane antigen.

Group 5 MAbs immunoprecipitated a 37K polypeptide, but it was distinguished from the 37K polypeptide identified by group 4 MAbs by the patterns of FA, ELISA and Western blotting.

The MAbs classified into group 6 was only one clone and it immunoprecipitated a 68/78K glycoprotein from MDV1-infected cells.

MAbs that were positive in FA, but that precipitated weakly or did not precipitate virus-specific proteins, were placed in groups 7 and 8, respectively.

In this study, I identified MDV2-specific polypeptides, while most polypeptides existed on MDV1 and MDV2-infected cells. Further, the type-specific MAbs established in the present study will be useful reagents for serotyping MDV and HVT.