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BIOCHEMICAL AND IMMUNOLOGICAL CHARACTERIZATION OF MAREK'S DISEASE TUMOR-ASSOCIATED SURFACE ANTIGEN (MATSA)

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Various kinds of antigens are expressed on the cell surface of Marek's disease (MD) lymphoblastoid cell lines, including MD tumor-associated surface antigen (MATSA), chicken fetal antigen (CFA) and other antigens. In the present study, the biochemical and immunological characterization of MATSA expressed on MSB1-Clo. 18 cells was investigated using a monoclonal antibody (2B9). The results are summarised as follows:

1. A monoclonal antibody (2B9) specific to MATSA of MSB1 cells reacted with MSB1 and MTB1 cells, but neither reacted with other lympholastoid cell lines from MD, avian leukosis and reticuloendotheliosis. 2B9 also reacted with various tumor cells derived from Md/5 infected chickens but not with various normal cells from specific pathogen-free chickens.
2. The reactivity of 2B9 to MATSA on MSB1-Clo. 18 cells was inhibited by anti-MATSA rabbit serum at a maximum of 85.5%.
3. The reactivity of 2B9 to MATSA on MSB1-Clo. 18 cells was lost by treatment of the cells with trypsin or pronase.
4. The reactivity of 2B9 to MATSA on MSB1-Clo. 18 cells decreased to about 80% by treatment of the cells with tunicamycin.
5. The antigenic activity of MATSA was stable by heating at 37°C for 30 minutes, but was unstable by heating at 56°C for 30 minutes, and it was lost by heating at 70°C for 30 minutes.
6. The antigenic activity of MATSA was stable at neutrality or alkalinity, but was unstable at an acidity below pH6.0.
7. The antigenic aftivity of MATSA decreased to 20–30% by sodium metaperiodate treatment.
8. The antigen activity of MATSA was stable by neuraminidase treatment.
9. The purity of MATSA increased 2,460 times by purification using affinity chromatography and DEAE ion-exchange chromatography. The purified MATSA was to have an apparent molecular weight of 70 kilodaltons by SDS-PAGE analysis.
10. MATSA crossreacted with anti-chicken thymus cell rabbit serum with or without absorption by chicken red blood cells, but it did not react with anti-chicken thymus cell rabbit serum absorbed bursa cells, nor with anti-bursa cell rabbit serum absorbed chicken thymus cells.
11. Chickens immunized by MATSA were not protected by challenge with transplantable MSB1-Clo. 18 cells under the present experimental condition.