

Effect of a Fungal Cu/Zn Superoxide Dismutase on the Cell-Mediated Immune Response in Graffi Tumor Bearing Hamsters

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The antibody-dependent cell cytotoxicity (ADCC) of spleen lymphocytes, isolated from hamsters with progressing myeloid Graffi tumor, was studied. The effect of the application of Cu/Zn superoxide dismutase, isolated from the fungal strain *Humicola lutea* (HL SOD), before and during tumor transplantation on the lymphocyte ADCC was examined. Myeloid Graffi tumor cells as target cells were used. Antibodies from a rabbit hyper-immune anti-tumor Graffi cells serum, or from tumor-bearing hamsters serum were used in the test. The leukocyte adherence inhibition (LAI) in the presence of tumor antigen was examined also during tumor progression. ADCC of the spleen lymphocytes, determined by both, rabbit and hamster anti-tumor antibodies, decreased during tumor progression. The optimum treatment of the animals by HL SOD induced a 20–30% increase of lymphocyte cytotoxicity against myeloid Graffi tumor cells. Cytotoxicity in presence of tumor bearing hamsters serum was twofold lower as compared to that one determined in the presence of rabbit hyper-immune anti-myeloid Graffi tumor cells serum. Leukocyte adherence inhibition (LAI) index in the presence of tumor antigen increased during tumor development in the groups of treated and untreated animals. The LAI indices of HL SOD-treated tumor-bearing hamsters were lower than that of untreated animals with tumors, what can be explained by a higher adherence ability of leukocytes induced by HL SOD treatment (in formula for calculation of LAI index the adherence value is in the denominator). The results show the beneficial effect of HL SOD on the cell-mediated immune response of myeloid Graffi tumor bearing hamsters, what is probably due to the participation of the enzyme in the host's oxidant-antioxidant balance.

Key words: Tumors, Superoxide Dismutase, Antibody-Dependent Cell Cytotoxicity