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COMPARISON OF THE GANGLIOSIDE COMPOSITION OF PROGRESSOR AND REGRESSOR MUTANTS FROM A MOUSE FIBROSARCOMA CLONE INDUCED BY 3-METHYLCHOLANTHREN

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The most important event in tumor growth is how a primary tumor cell obtains its malignant (progression) character. In my study, a clone, BMT-11c19, derived from a fibrosarcoma induced by 3-metylcholanthren injection into a C57BL/6 mouse was chosen. Progressor clone (QP cells) and regressor clones (QR cells) were also otained by *in vitro* quercetin (a mutagenic agent) treatment of the parent cells. To study the progression mechanism more easily, progressor revertant clones (QRpP cells) were obtained from QR cells by transplantation of the cells together with the cell-attached plastic plate. It was thought that the revertants occured as a result of interaction between the host inflammatory cells and the tumor target cells. Among the three cells, no significant difference was observed in the *in vitro* growth curves, cloning efficiencies or the demands of serum concentrations. The only apparent difference was observed in *in vitro* prostaglandin E_2 (PGE_2) production. The products of PGE_2 in culture medium correlated with the *in vivo* growth rate and metastatic ability of the tumor cells (QP and QPpP cells had highly metastatic properties). After subcutaneous transplantation, the regressor (QR) tumor mass grew in the early periods and started involution after more than one week. QP, QRpP and the parental cells continuously grew in potency until the mouse died of the tumor growth about three weeks later. In these cell lines, the amounts of gangliosides correlated with the metastatic properties. The metastatic cells (QP and QRpP cells) had lower amounts of gangliosides than the nonmetastitic cells. Ganglioside compositions of these cultured cells were compared by thin-layer chromatography (TLC). The existence of GM3, GM1b, GD3 and GD1b in all cell lines was confirmed by TLC-immunostaining using each ganglioside-specific monoclonal or polyclonal antibody. GM2, GD1a and GT1b were assumed to exist from their Rf values in comparison with those of total brain gangliosides. An apparent difference between progressor and regressor cells was the more abundant contents of GM3 ganglioside in the progressor cells. Therefore, GM3 (NeuAc) or GM3 (NeuGc) were added to the culture medium to change the regressor properties into progressor ones. Addition of 50 μM GM3 (NeuGc) enhanced PGE_2 production of the regressor cells threefold. The biological significance of the enhancement is now being studied.