Journal of
Cancer Research
and
Clinical Oncology

Founded in 1903 as Zeitschrift für Krebsforschung

Scientific Proceedings Sixth Symposium of the Section of Experimental Cancer Research (SEK) of the German Cancer Society

April 10–12, 1991
Heidelberg, Federal
Republic of Germany

Supplement to
Journal of Cancer Research
and Clinical Oncology
Volume 117, 1991

S 49

Z 2

Induction of Differentiation in Choriocarcinoma Cells by Extracellular Matrix: On the Role of Physical Properties of the Matrix.

H.-P. Hohn*, M. Höök*, H.-W. Denker*;

*) Inst. f. Anatomie, University Hospital, Essen, FRG;
*) Dept. of Biochemistry, University of Alabama at Birmingham, USA

Human choriocarcinoma cells provide a useful experimental model for the study of differentiation potentials of tumor cells and their role in malignancy. We have investigated the ability of extracellular matrix to induce differentiation in BeWo choriocarcinoma cells in vitro. The response of all differentiation markers monitored (steroid and peptide hormone production, proliferation, morphology, alkaline phosphatase) was highly pronounced on three-dimensional flexible matrices (gels: collagen I, Matrigel™, placental matrix) as opposed to rigid substrata (including additionally: fibronectin, laminin, collagen IV). The results indicate that not only the type of effector molecules but also the physical properties of the matrix contribute important information for the induction of differentiation in trophoblast tumor cells. This is supported by experiments with artificial flexible substrata (gels of derivatized agarose with or without matrix molecules coupled to it) or on plastic coated with poly-HEMA (different concentrations: modulation of cell shape). Cells always showed increased expression of differentiation markers when having a rounded as opposed to flattened morphology. It is concluded that modification of cell shape can provide a differentiation stimulus for choriocarcinoma cells that does not necessarily depend on the recognition of specific adhesion molecules.

Supported by Dr. Mildred Scheel Stiftung für Krebsforschung

Springer International

432 J Cancer Res Clin Oncol ISSN 0171-5216 JCROD7 117 (Suppl): S1–S60 (1991)