Analysis of tumstatin-treated human SCCVII cells

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Abstract

Vascular basement membrane constitutes an important component of blood vessels and capillaries. Type IV collagen is a major component of vascular basement membrane. Tumstatin is a C-terminal globular non-collagenous domain of the alpha 3 chain of type IV collagen. Tumstatin inhibits tumor growth in mouse models. It is a potent inhibitor of angiogenesis with distinct antitumor activity. However, the mechanism of tumstatin-induced cell apoptosis in human squamous cell carcinoma (SCCVII) cells is not fully characterized. In this study, we first examined the high-level expression of the cDNA for human tumstatin in insect cells and the purification of recombinant tumstatin using metal chelate affinity fractionation. Purified recombinant tumstatin inhibited SCCVII proliferation in a dose-dependent manner. Thereafter, we performed the microarray analysis of tumstatin-treated SCCVII cells. We are currently investigating the identification of SCCVII genes responsible for cell apoptosis in response to tumstatin treatment (This work was supported by the Korea Research Foundation Grant-KRF-2004-041-F00019).

References

1. Maeshima, Y., P.C. Colorado, A. Torre, K.A. Holthaus, J.A. Grunkemeyer, M.B. Ericksen, H. Hopfer, Y. Xiao, I.E. Stillman, and R. Kalluri (2000) Distinct antitumor properties of a type IV collagen domain derived from basement membrane, *J. Biol. Chem.* 275: 21340-21348.
2. Darland, D. C. and P.A. D'Amore (1999) Blood vessel maturation: vascular

development comes of age, *J. Clin. Invest.* 103: 157-158.

3. Maeshima, Y., M. Manfredi, C. Reimer, K. A. Holthaus, H. Hopfer, B.R. Chandamuri, S. Kharbanda, and R. Kalluri(2001) Identification of the anti-angiogenic site within vascular basement membrane-derived tumstatin, *J. Biol. Chem.* 276: 15240-15248.