Amplification of acidic endothelial cell growth factor (ECGF) gene sequences in hamster DDT1-MF2 tumor cells

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Studies in our laboratory have used the hamster tumor cell line, DDT1-MF2, as a model system (2) to study androgen stimulated growth of these cells and how glucocorticoids inhibit their growth. Recent studies (3) have shown that steroid modulation of growth may involve the PDGF or c-sis gene.

We have shown (2,4) by Southern Blot analysis, using a v-sis probe which is homologous to PDGF that the PDGF gene structure in DDT1 tumor cells is similar to normal hamster DNA and that there is no major amplification of PDGF sequences.

In this report we show, however, that at least another growth factor gene, aECGF, is amplified in the DDT1 tumor cells relative to the normal hamster DNA. In Figure 1 we can see that for every enzyme, one or more bands are amplified 3-10 fold or more in the DDT1-MF2 DNA relative to the normal hamster DNA. Control filter with the same DNA preparations probed with v-sis indicated the hamster PDGF gene is not amplified and is in one or two copies per haploid genome. The staining pattern indicate equivalent loads of DNA for tumor and normal preparations. Structure of the tumor aECGF is well underway using isolated cosmid tumor clones.

These results are of interest since recent reports (5,6) have shown the importance of amplified gene sequences and oncogenes in tumors and their potential importance in diagnosing early cancers. Also preliminary data indicate the aECGF receptor on DDT1 cells can be dramatically increased with testosterone and glucocorticoids (McKeehan, Adams, and Harris, unpublished).

Amplification of ECGF Gene Sequences in DDT1 Tumor Cells.			
ESTIMATES			
Kb	fold amplified	Kb	fold amplified
Hd3 3.8	~5	R1 9.2	3+
		R1 3.3	3
		R1 2.2	5+
Bam 5.1	3;	Xba 10	5-10
Bam 3.5	3-4	Xba 9	5-10
Sst1 12.0	5-10;	Bgl12	5-10
Mbo1	5+	6.1	

Figure 1-A Southern Blot analysis of normal liver DNA and tumor DDT1-MF2 DNA using the human acidic ECGF EcoRI/ Bgl12 ³²P-cDNA Probe (1). Equivalent amounts of normal (N) and tumor (T) DNAs were digested by the restriction endonucleases, indicated. The DNAs were transferred to nitrocellulose and hybridized in 6X SSC @ 68°C. The human ECGF-cDNA was a gift from M. Jaye et al. (1).

Fig. 1-B Amplification of selected DDT1 tumor bands relative to normal hamster DNA. Estimates taken from the Southern Blot analysis from Figure 1-B. and estimated by densitometer scans of Southern Blot shown in 1-A.

References:

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