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Transforming growth factor β (TGFβ) is secreted by transformed cells as well as by normal cells. It shows several biological effects common with phorbol esters including modulation of specific programmes of cell differentiation. We have used TGFβ in two-stage BALB/c 3T3 cell transformation to see if it can act as a tumour promoter. After a methylcholanthrene (MCA) initiation treatment of BALB/c 3T3 cells, treatment with phorbol-12,13-didecanoate (PDD) at 100 ng/ml during 4 weeks enhanced 4 to 5 fold the number of transformed foci in comparison with the result obtained on non-initiated cells. When TGFβ at 1 ng/ml was used during 4 weeks either alone or in combination with epidermal growth factor EGF (2 ng/ml), it could induce 5 to 6 fold more transformed foci in MCA-initiated BALB/c 3T3 cells than in non-initiated cells. Furthermore, a good dose response in regard to TGFβ (0.1 to 1 ng/ml) has been obtained for its tumour promoting activity on MCA-initiated BALB/c 3T3 cells. Thus, TGFβ exhibits 100 fold more tumour promoting activity than PDD in two-stage BALB/c 3T3 cell transformation and we have data which suggest that this tumour promoting activity may not be mediated by a complete block of intercellular communication.

MUSCARINIC RECEPTOR SENSITIVITY IN TWO HUMAN NEUROBASTOMA CELL LINES WITH DIFFERENT ACTIVATED ONCOGENES

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The ras oncogene has been suggested to be involved in receptor linked inositol lipid breakdown and Ca^{2+} mobilization. The human neuroblastoma cell lines SH-SY5Y and IMR 32 contain an activatd ras and amplified myc oncogenes respectively. In this study, we have demonstrated that SH-SY5Y cells are 10 to 100 fold more sensitive than IMR 32 cells to muscarinic receptor agonist with respect to Ca^{2+} mobilization. Induction of differentiation in SH-SY5Y cells with TPA normalizes this difference by decreasing the receptor sensitivity. Thus, the unusually high affinity of SH-SY5Y cells to muscarinic agonists might be due to the activated ras oncogene.

DIFFERENT FORMS OF PDGF-LIKE MOLECULES: POSSIBLE ROLE IN AUTOCRINE GROWTH STIMULATION

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PDGF, a major mitogen for connective tissue cells, is a dimeric molecule of two homologous but distinct polypeptide chains denoted A and B. Transformation by simian sarcoma virus is exerted by autocrine stimulation of cell growth involving a factor structurally related to a PDGF B chain homodimer. A human osteosarcoma cell line produces a growth factor similar to a PDGF A chain homodimer, whereas PDGF purified from human platelets probably is a heterodimer of one A chain and one B chain. mRNAs for the A and B chains of PDGF are frequently expressed in human tumour cell lines as well as in certain normal cell types. The regulation of the expression of PDGF-like growth factors, and possible functional differences between the different dimers have been evaluated.

DNA-BOUND POLYCYCLIC AROMATIC HYDROCARBONS IN WHITE BLOOD CELL DNA OF FOUNDRY WORKERS

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Iron foundry workers are exposed to elevated levels of polycyclic aromatic hydrocarbons (PAHs) released from heated organic material. They have also been shown to have an excess risk of lung cancer, to which PAHs may contribute. We applied here benzo(a)pyrene-DNA antibodies and a ^{32}P-postlabelling technique to determine the levels of PAH adducts in workers' white blood cell DNA. Both assays showed that the foundry workers had some 5 to 10 times higher levels of measurable adducts in their DNA as compared to the controls. Furthermore, when the exposed were blindly classified by industrial hygienists into three categories of exposure, the assays revealed the dose-response. The results provide confirmation of the usefulness of these techniques for human exposure monitoring.