isolated hamster hepatocytes of high viability, as measured by the efflux of lactate dehydrogenase, the intracellular and extracellular distribution of Na+ and K+, and the plasma membrane potential. DES was metabolized by these cells to several oxidative metabolites and also to glucoronides and sulphates. The oxidative compounds comprise Z,Z-dienestrol, 1-hydroxy-DES and 3'-hydroxy-DES. Interestingly no isomerization of Z-isomers could be detected.

This study demonstrates the ability of isolated hamster hepatocytes to metabolize DES via conjugative and oxidative pathways. Liver cells should therefore be useful in studying the effect of 7,8-BF pretreatment on DES metabolism, thereby helping to clarify the role of metabolic activation in DES-mediated tumourigenesis.

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## EXPRESSION OF THE TRANSFORMATION-ASSOCIATED PROTEIN p53 IN RODENT CELLS TRANSFORMED BY HUMAN ADENOVIRUSES WHICH DIFFER IN THEIR ONCOGENIC POTENTIAL

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The steady-state levels of p53 protein and mRNA were analyzed in a range of rodent cells transformed by highly oncogenic Adenovirus (Ad) type 12 or non-oncogenic Ad2 or Ad5. Analysis of the steady-state level of p53 protein by Western blotting showed a reduction in the level of p53 protein in Ad12 transformed cells when compared to Ad2 or Ad5 transformed cells. The half-life of p53 was similar (approximately 10 to 15 hr) in cells transformed by either Adenovirus serotype.

In order to analyze further the level of control of p53 expression, the steady-state concentration of p53 mRNA in each transformed cell line was analyzed by Northern blotting. This showed a marked reduction in the steady-state level of p53 mRNA in Ad12 transformed cells compared to Ad2 transformed cells. There appears therefore to be no strict correlation between the steady-state level of p53 protein and mRNA and the oncogenicity of Ad-transformed cells examined in this study.

## MOLECULAR AND BIOLOGICAL CHARACTERIZATION OF FIBROBLAST GROWTH FACTOR FGF, A POTENT INDUCER OF ANGIOGENESIS

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Two proteins (16 to 17 kD), acidic and basic FGF, have been isolated and structurally characterized by protein sequencing and cDNA cloning. The FGFs are related by structure, possess similar biological activities and are present in many tissues. In vitro, they are strongly mitogenic for vascular endothelial and other mesodermal cells, and also modulate non-mitogenic cellular activities (endocrine, differentiated functions). In vivo, FGFs induce the formation of new capillary blood vessels and promote wound healing. These data suggest that FGFs may have a physiological role as local regulators of normal tissue growth, repair and maintenance. FGFs may also be implicated in various pathological conditions involving altered neovascularization, e.g. in solid tumour growth. Certain tumour cells synthesize basic FGF and the growth of tumours can be inhibited by antibodies that neutralize the mitogenic activity of basic FGF.

## EARLY CHANGES IN GENE EXPRESSION INDUCED BY TUMOUR PROMOTERS IN MOUSE SKIN KERATINOCYTES

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The potent tumour promotor 12-0-tetradecanoylphorbol-13-acetate (TPA) causes alterations of both epidermal differentiation and proliferation patterns in vivo as well as in cultured keratinocytes. To characterize early changes (within 4 hr) in gene expression, a cDNA library representative for mRNAs expressed in mouse epidermis in vivo after TPA treatment was constructed and screened with a cDNA probe enriched in sequences preferentially expressed after TPA treatment. Here we describe the characteristics of two cDNA clones λB3 (430 bp) and λ B10 (850 bp) consistently showing differential hybridization. The clones recognize unique TPA inducible transcripts of 0.6 and 5.0 kb, respectively. In primary mouse keratinocytes a low basal level of expression is observed, which is markedly reduced when cells are induced to differentiate. Similar to that observed for ornithine decarboxylase mRNA, new protein