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[Lab. of Biochemistry]

Chemoprevention of 4-Nitroquinoline 1-Oxide-Induced Oral Carcinogenesis by Dietary Protocatechuic Acid During Initiation and Postinitiation Phases.

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The modifying effects of dietary administration of protocatechuic acid (PCA) during initiation or postinitiation phase on the oral carcinogenesis initiated by 4-nitroquinoline 1-oxide were studied. The frequencies of tongue tumors and the area of silver-stained nucleolar organizer regions proteins/nucleus were significantly reduced in rats given PCA. In addition, PCA exposure decreased polyamine levels in the oral mucosa. Thus, PCA inhibited rat oral carcinogenesis in both initiation and postinitiation phases, which might be related to suppression of cell proliferation by PCA.

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[Lab. of Biochemistry]

Molecular Cloning of Two Human Liver 3 α -Hydroxysteroid/Dihydrodiol Dehydrogenase Isoenzymes That are Identical with Chlordecone Reductase and Bile-acid Binder.

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Two cDNA clones (C9 and C11), encoding for human liver 3 α -hydroxysteroid/dihydrodiol dehydrogenases, DD2 and DD4, respectively, were cloned from a human liver cDNA library. There was 82% amino acid sequence identity between the two enzymes, indicating that the enzymes are genetic isoenzymes. A computer-based comparison of the cDNAs of the isoenzymes with the DNA sequence database revealed that the nucleotide and amino acid sequences of DD2 and DD4 are virtually identical with those of human bile-acid binder and human chlordecone reductase cDNAs respectively.

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Purification and Characterization of Dimeric Dihydrodiol Dehydrogenase from Dog Liver.

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High NADP⁺-linked dihydrodiol dehydrogenase activity was detected in dog liver cytosol, from which a dimeric enzyme composed of Mr 39,000 subunits was purified. The enzyme oxidized *trans*-cyclohexanediol, and *trans*-dihydrodiols of benzene and naphthalene, the [1R,2R]-isomers of which were selectively oxidized. The amino acid sequences did not show significant similarity with the primary structures of members of the aldo-keto reductase and short chain dehydrogenase superfamilies. Since the enzyme purified from dog liver was immunologically similar to the dimeric enzymes from monkey kidney, rabbit lens and pig liver, the dimeric enzymes might comprise a novel enzyme family.