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3(20)α-Hydroxysteroid Dehydrogenase Activity of Monkey Liver Indanol Dehydrogenase.

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Homogeneous indanol dehydrogenase from monkey liver oxidized reversibly 3α- or 20α-hydroxy groups of several bile acids and 5β-pregnanes with high k_{cat}/K_m values. Competitive inhibition of the hydroxysteroid dehydrogenase activity of the enzyme by medroxyprogesterone acetate, hexestrol, and 1,10-phenanthroline suggests that both 1-indanol and hydroxysteroid are oxidized at the same active site on the enzyme. The specific inhibitor of the enzyme, 1,10-phenanthroline, suppressed the 3α-hydroxysteroid dehydrogenase activity in the crude extract of monkey liver by 50%. The results strongly suggest that indanol dehydrogenase acts as a 3(20)α-hydroxysteroid dehydrogenase in the metabolism of certain steroid hormones and bile acids.

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Dimeric Dihydrodiol Dehydrogenase in Monkey Kidney. Substrate Specificity, Stereospecificity of Hydrogen Transfer, and Distribution.

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Chemical cross-linked and NADPH binding studies suggested that the native dihydrodiol dehydrogenase from monkey kidney is a basic dimer (Mr 78,000) and one active site per the subunit. The enzyme oxidized specifically *trans*-dihydrodiols of benzene and naphthalene, whereas it catalyzed the reduction of dihydroxyacetone phosphate at pH 7.4. The enzyme transferred the 4-pro-*R* hydrogen atom of NADPH to carbonyl substrate. Immunochemical and immunohistochemical studies using a specific antibody revealed that this enzyme specifically distributed in proximal and distal tubules of the cortex, and in the loop of Henle of the medulla in the kidney.

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Isolation from Pig Lens of Two Proteins with Dihydrodiol Dehydrogenase and Aldehyde Reductase Activities.

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Dimeric and monomeric proteins containing dihydrodiol dehydrogenase and aldehyde reductase activities were purified from pig lens. The dimeric enzyme of Mr 65,000 specifically oxidized the *trans*-dihydrodiols of naphthalene and benzene with $NADP^+$ as a strict cofactor, and reduced α-diketones, aromatic aldehydes and glyceraldehyde with NADPH as a cofactor. The monomeric enzyme of Mr 35,000, although identical with aldose reductase, oxidized the *trans*-dihydrodiol of naphthalene at a pH optimum of 7.6. These results suggest that the two enzymes are involved in the pathogenesis of naphthalene cataract.