Demonstration of 3α (17β)-hydroxysteroid dehydrogenase distinct from 3α-hydroxysteroid dehydrogenase in hamster liver.

Mari Ohmura, Akira Hara, Makoto Nakagawa, Hideo Sawada*

NAD-linked and NADP-linked 3α-hydroxysteroid dehydrogenases were purified from hamster liver cytosol. The two monomeric enzymes with Mr-38,000 differed in pI values, activation energy, heat stability and peptide fragment patterns. The NADP-linked enzyme catalyzed the oxidation of various 3α-hydroxysteroids, whereas the NAD-linked enzyme oxidized both 3α- and 17β-hydroxysteroids. The thermal stabilities of the 3α- and 17β-hydroxysteroid dehydrogenase activities of the NAD-linked enzyme were identical, and the two enzyme activities were inhibited by mixing 17α- and 3β-hydroxysteroid substrates, respectively. Synthetic steroids and 3β-hydroxysteroids competitively inhibited 3α- and 17β-hydroxysteroid dehydrogenase activities of the enzyme.

Purification and properties of multiple forms of dihydrodiol dehydrogenase from human liver.

Akira Hara, Hiroyuki Taniguchi, Toshihiro Nakayama, Hideo Sawada*

Two acidic and three basic forms of monomeric dihydrodiol dehydrogenase with molecular weights in the range of 36,000-39,000 were purified from human liver. One acidic enzyme was immunologically identified as aldehyde reductase. Two of the basic enzymes exhibited a 20α-hydroxysteroid dehydrogenase activity and was sensitive to 1,10-phenanthroline, whereas the third basic enzyme oxidized some 3α-hydroxysteroids at low rates and was inhibited by cyclopentane-1,1-diacetic acid. Another acidic enzyme showed a high 3α-hydroxysteroid dehydrogenase activity and was the most sensitive to inhibition by medroxypregesterone acetate. The Km values of the enzymes, except aldehyde reductase, for hydroxysteroids were lower than for xenobiotic alcohols.

Primary Structure of Vitamin K-dependent Human Protein Z.

Hiroshi Sejima, Tatsuya Hayashi, Yoshihiro Deyashi, Junji Nishioka, Koji Suzuki

The primary structure of a vitamin K-dependent human protein Z was determined by a combination of analyses of 41 amino acid residues of the NH2-terminal region and 1265 nucleotide base pairs of a cDNA encoding the residual COOH-terminal part of the protein and the 3' noncoding region. Human protein Z has 360 amino acid residues which is less than that of bovine protein Z containing 396 residues. Human protein Z was composed of an NH2-terminal domain rich in γ-carboxyglutamic acids, two epidermal growth factor-like domains and a COOH-terminal serine protease-like domain as was bovine protein Z.