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ASTⅣ의 cDNA와 genomic DNA cloning과 Cd, Cu 그리고 Zn에 의한 ASTⅣ activity의 regulation

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A complementary DNA (cDNA) for rat hepatic aryl sulfotransferase IV (AST IV) was isolated, characterized, and used as a hybridization probe to evaluate the molecular basis for the differential expression of AST IV during 2-acetylaminofluorine (2AAF)-induced hepatocarcinogenesis. The AST IV cDNA clone was obtained by immounochemical screening of a male Sparque-Dawley rat liver cDNA library. The AST IV cDNA was found to be 1.3 kilobases long and to encode a fusion protein which was reactive with an antibody to AST IV and enzymatically able to generate the sulfuric acid ester of N-hydroxy-2AAF. Sequence analysis of the AST IV cDNA showed it to be 1127 residues in length and to have essentially conplete homology with PST-I cDNA, a previously reported, 1028-base cDNA for an uncharacterized rat liver aryl sulfotransferase.

This report contains also the first description of the genomic structure for a sulfotransferase (ST). The gene (ASTIV) encodes rat hepatic aryl ST IV, also known as tyrosine-ester ST (EC 2.8, 2.9). A phage genomic clone containing 70%of the 3′ AST gene coding sequence was isolated after screening a rat genomic library with an ASTIV cDNA. The remaining 5′ sequence was determined from a PCR product obtained from rat genomic DNA and ASTIV cDNA specific primers. ASTIV spans 3.5kb and contains eight exons and seven introns.

A nutrition-related study on the role of zinc, copper and cadmium in the regulation of aryl sulfotranserase Ⅳ activity in the rat liver is contained.