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Collagenolytic Cathepsins in Dimethylnitrosamine Induced Hepatic Fibrosis in Rats

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The possible role of collagenolytic cathepsins in the pathogenesis of hepatic fibrosis is investigated in experimentally induced liver fibrosis in albino rats. The liver injury was induced by intraperitoneal injections of dimethylnitrosamine (DMN) in doses of 1 μl/100g body weight. The injections were given on the first 3 consecutive days of each week over a period of 21 days. The collagen degrading cathepsins such as cathepsin B, cathepsin D and collagenolytic cathepsin were monitored in liver and serum samples on the 7th, 14th and 21st days after administration of DMN. The total collagen levels were also studied in the liver tissue. Furthermore, the serum and urinary hydroxyproline levels were investigated in order to assess the rate of collagen degradation during hepatic fibrosis. The results indicated a significant increase in the levels of all collagenolytic cathepsins in the liver on the 7th and 14th days of DMN administration. The difference was not significant on the 21st day. In serum, the cathepsin levels were increased on all the days after DMN treatment. About 4 fold raise was recorded in the amount of total liver collagen. The serum and urinary levels of hydroxyproline demonstrated increased levels with a maximum on the 7th day. The results suggest that there is an increased synthesis of collagenolytic cathepsins in the early stages of fibrosis but it is diminished in chronic stages due to extreme necrosis of the functional liver cells. The decreased synthesis of collagenolytic cathepsins by the liver in the later stages of fibrosis plays a vital role in accumulation of collagen in the liver.

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Characterisation and purification of a type II restriction endonuclease, SscI from streptomyces species.

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Abstract.

A new type II restriction endonuclease, SscI has been identified and characterised from streptomyces species. The enzyme has been purified and the recognition sequence was determined. The restriction endonuclease is found to be an isoschizomer of XhoI which recognises and cleaves the DNA at C↓TCGAG sequence. The optimum temperature, pH and salt requirement of SscI were compared with that of XhoI.