[*Toxicol. Lett.*, **94**, 137-144 (1998)] [Lab. of Pharmaceutics]

Ethanolamine Stimulates Repair Processes in Acute CCl_4 Damage of Mouse Liver.

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Ethanolamine, a positively charged hydrophilic component of the phophatidylethanolamine (PE) which is also a precursor of phosphatidylcholine (PC), enhances the repair processes 24 h after carbon tetrachloride (CCl_4) intoxication of mouse liver. Ethanolamine quickly reduced aminotransferase activity released in the serum, increased the hepatocellular nuclear BrdU uptake, a maker of S phase, and the epidermal growth factor (EGF) receptor content in the liver injured with CCl_4. Thus, exogenous administration of ethanolamine may function as a liver proliferating factor in CCl_4 intoxicated mouse liver.

[*Eur. J. Biochem.*, **253**, 766-770 (1998)] [Lab. of Pharmaceutics]

Induction of Necrosis by Zinc in Prostate Carcinoma Cells and Identification of Proteins Increased in Association with This Induction.

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In the present study, we found that exposure to zinc results in necrosis of prostate carcinoma cells. When zinc acetate was added to LNCaP or PC-3 cells in monolayer culture, they began to death from the culture dishes, and viability was lost after 4-8 h. Most of the cell death was found to be due to necrosis as determined by double staining with fluorescein-isothiocyanate-labeled annexin V and ethidium bromide, and by detection of hypodiploid cells. Associated with the induction of necrosis was an increase in low molecular-mass proteins, identified by HPLC analysis to be thymosin β10, parathymosin and GAGE in LNCaP cells, and thymosin β4, parathymosin and metallothionein in PC-3. The time course of the increase of thymosin β10 in LNCaP cells and thymosin β4 in PC-3 cells was consistent with that of appearance of cell detachment and dead cells. These results indicate that zinc can induce necrosis and suggest that production of proteins, β-thymosins, is involved in induction of processes leading to cell detachment.

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The Effect of Ethanolamine on Acute Carbon Tetrachloride Intoxication.

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The effect of ethanolamine on injured liver were investigated by oral administration of ethanolamine to male ddY mice 24 h after carbon tetrachloride (CCl_4) injection. The serum aminotransferase activities in mice with liver injury were reduced by ethanolamine treatment (10-30 mg/kg body weight). Drastically increased regenerative reaction of ethanolamine treated-CCl_4 injured liver was also observed through an increase in 5-bromo-2'-deoxyuridine uptake. ATP concentration in liver tissue was recoverd by administration of ethanolamine. These results suggest that oral administration of ethanolamine accelerates recovery from CCl_4-induced liver injury.

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Increased Expression of Sucrase and Intestinal-type Alkaline Phosphatase in Human Gastric Carcinomas with Progression.

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The activities of sucrase, total alkaline phosphatase (total ALP) and intestinal-type alkaline phosphatase (I-ALP) were assayed in gastric carcinomas and in their surrounding mucosae from 57 patients with advanced cancers, and the localization of sucrase in 203 carcinomas, including 86 early cancers, was examined immunohistochemically using polyclonal anti-sucrase antibody. All three enzymes were active in the 57 carcinomas as well as in their surrounding mucosae, but the levels were fairly low as compared to those in normal jejunum mucosa. A considerable part of the total ALP activity in tumor specimens was assumed to be due to I-ALP itself. Increased sucrase and I-ALP were found with greater depth of invasion by undifferentiated-type carcinomas. The pattern of immunohistochemical localization of sucrase in the 203 carcinomas also clearly indicated increased expression with greater depth of invasion in differentiated-type carcinomas.