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The protein levels of collagen type I, collagen type IV and fibronectin were examined in 6-, 12-, 18-, and 24-month old Fischer 344 rats which were fed ad libitum and diet-restricted. The protein level of type I collagen increased in the kidney and testis by aging and it was modulated by dietary restriction. The m-RNA level of type I collagen in the testis was changed as a similar pattern. Type I collagen in the liver and lung had no change by aging and dietary restriction. The protein level of type IV collagen decreased by aging in the testis and kidney and dietary restriction saved their decrease. However, the m-RNA level of type IV collagen in the testis was not changed by aging and dietary restriction. The protein level of type IV collagen in the liver increased by aging and dietary restriction modulated the increase. However, type IV collagen was not detected in the lung. The protein level of fibronectin increased several times by aging in the testis, kidney and liver and dietary restriction modulated their increase. Even though fibronectin protein level decreased in the lung by aging, dietary restriction had no effects on it. Therefore, the detailed molecular and biochemical studies are further needed to clarify the effects of aging and dietary restriction on the levels of extracellular matrix proteins.

[PB3-1] [10/20/2000 (Fri) 15:30 - 16:30 / [Hall B]]

Nicotine alters the characteristics of cAMP -exposed cerebellar glial cells

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Cerebellar glial cells prepared from 8-day rat pups were used to investigate the effects of subacute nicotine exposure on the glutamate uptake. These cells were exposed to cAMP and nicotine for 2 to 10 days in situ. cAMP and nicotine exposure did not result in any change in cerebellar glial cell viability at concentrations up to 500 μM. Glutamate uptake in the dibutyl cAMP-treated glial cells was significantly increased (30.7%) by 100 μM of nicotine. After subacute exposure with nicotine, the basal glutamate uptake was significantly decreased (11.4%). Furthermore, the IC50 of L-pyrollidine-2,4-dicarboxylic acid, glutamate uptake inhibitor, on the glutamate uptake was 6.7 times decreased compared to the control (184.1 vs 27.4 μM) and the sensitivity of glial cells to PDC was increased. In addition, the activity of glutamine synthetase in subacute nicotine exposed glial cells was 2 times increased compared to the control. After nicotine exposure, the changes in the characteristics of glutamate uptake in cAMP-exposed glial cell were opposite to those in cultured glial cell without cAMP. These results indicate that subacute nicotine exposure modulates the characteristics of the glutamate uptake and the GS activities of glial cells. Also the result suggest that the different states of glial cells during age and in regions might be differently affected by the exposure of subacute nicotine.

[PB3-2] [10/20/2000 (Fri) 15:30 - 16:30 / [Hall B]]

Effects of dehydroevodiamine on the release and uptake of glutamate in cultured cerebellar cells.

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