the aged individuals. The macrophage cytokines induced by AGEs may also modulate liver protein metabolism by changing tyrosine aminotransferase (TAT) activity in rat hepatocyte cultures.

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S15.20

Serum Carbohydrate-Deficient Transferrin in Alcoholic Patients

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Transferrin usually contains two complex carbohydrate chains consisting of four different carbohydrates: *N*-acetylglucosamine, mannose, galactose and sialic acid. Sialic acid is the only charged carbohydrate. The normal main isoform of transferrin has a pH of 5.4 and four sialic acid residues, two on each carbohydrate chain. Isoforms, whose corresponds to disialo, mono and asialotransferrin are present in the serum of alcohol-abusing patients. The term of carbohydrate-deficient transferrin or CDT for these isoforms was developed. Recent studies have shown that increased levels of serum CDT are a good marker of alcohol abuse. This study was aimed to assess the value of CDT in alcoholic patients and to estimate the diagnostic sensitivity and specificity of CDT RIA (Pharmacia) to differentiate between healthy control and alcoholic patients. We studied 73 active chronic alcoholics (>80 g ethanol/day) and 38 healthy controls. In all patients serum CDT was measured using CDT Radioimmunoassay kit (Pharmacia, Uppsala, Sweden), and other biochemical alcohol markers: Mean erythrocyte corpuscular volume (MCV) and GGT.

CDT serum concentrations were: (mean ± SD) 34.2 ± 15.8 U/L in active chronic alcoholics and 12.1 ± 3.1 U/L in healthy controls. For a cut off value of 20 U/L CDT had a sensitivity, specificity and diagnostic efficiency of 84.9%, 100% and 90.1% respectively. No correlation was found between CDT and MCV and also between CDT and GGT.

These results suggest that determination of CDT in serum may be a useful marker of chronic alcohol abuse and to have the potential of filling a clinical void in the diagnosis of alcohol-related diseases. It is also of scientific interest for further studies of the biological action and effects of alcohol abuse on glycoprotein metabolism.

S15.21

β1,4-Galactosyltransferase in Tumor Cells – Transport of the Enzyme from Golgi to Surface Membrane and Release to the Medium

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An improved method of β1,4-galactosyltransferase (GTase) activity based on the time-dissolved immunofluorescence assay was established using a monoclonal antibody, H-11 which recognizes paragloboside. The method was sensitive enough to detect 0.2 pmol of the incubation product, and has many advantages as follows: 1, Simple. 2, Identification and quantification of the product can be simultaneously done. 3, Many samples are assayed on one microtiterplate. The method was applied to the detection of the GTase activity in sera from patients with cancer or benign disease and reference sample group. The enzyme activities were found to be significantly high in sera of cancer patients. The release of the enzyme from tumor cells was confirmed and found to be growth dependent. The enzyme was purified from the culture medium of AZ 521 cells (human gastric tumor cell line) and found to be identical with the GTase involved in the synthesis of lactose by Western blot analysis. The enzyme was shown to be transported from Golgi apparatus to surface membranes in accordance with the cell density. From these results, the appearance of the enzyme in the serum was confirmed to be derived from tumor cells. The transport and secretion of the GTase are assumed to be activated in the tumor cells.

S15.22

Changes in the Fucose Content of Haptoglobin in Cancer: Association with Disease Progression

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Changes have been detected in the fucosylation of many molecules in cancer in cultured neoplastic cells, human tumours and secreted glycoproteins. Of particular relevance to invasion and metastasis, is the increased expression on tumour cells of a fucosylated Le^x antigen that binds to adhesion molecules on endothelium cells. We showed that cancer sera contained haptoglobin (Hp) that strongly interacted with the fucose-specific lectin, lotus tetragonolobus. The concentration of this abnormal Hp was directly related to tumour burden and also correlated with the blood activity of 3-fucosyltransferase. In this study we have measured the monosaccharide composition of Hp isolated from blood samples of healthy women, women with benign and malignant breast disease, and ovarian cancer patients who were either responding or non-responding to chemotherapy. There were seven women in each group. Hp was extracted from serum using an anti-Hp antibody coupled to Sepharose beads and the carbohydrate concentrations were determined using high performance anion-exchange chromatography and pulsed amperometric detection (Dionex carbohydrate system). There was a large increase in the fucose content and smaller increases in the GlcNAc and Gal content of Hp in ovarian cancer patients with progressive disease. When the patients were in remission and responding to treatment, increased fucose was not detected, but the concentrations of GlcNAc and Gal were still elevated. The sialic acid content of Hp was also elevated in this latter group. These results suggest that tumour growth is causing the elevation of fucose in Hp, but a different mechanism is responsible for the changes in the other sugars. The fucose content of Hp was increased in breast cancer but not in women with benign breast disease. If the breast tumour was assessed