

**ACTH therapy for infantile spasms: a combination therapy with high-dose pyridoxal phosphate and low-dose ACTH.**

Takuma Y. *Epilepsia* 1998;39(Suppl 5):42-45.

Combination therapy consisting of high-dose pyridoxal phosphate (40-50 mg/kg/day) and low-dose synthetic ACTH (0.01 mg/kg/day) was prescribed in 28 children with infantile spasms. Monotherapy with pyridoxal phosphate provided excellent seizure control in 3 of the 28 (11%) patients. ACTH was subsequently added to the regimen of the remaining 25 patients. As of 1 month after discontinuing the ACTH treatment, 21 of the 25 (84%) patients had experienced no seizures. The mean interval until seizure control was achieved was 4.1 days after the start of treatment with ACTH. The 21 patients have been monitored for a mean of 34.9 months (range 2-81 months); 6 patients (29%) have had recurrences of infantile spasms, and 10 (48%) have experienced normal development. Fourteen of the 28 patients (50%) have had transient increases in liver enzymes, but none of the patients developed more serious side effects.

**Lipid peroxidation and the role of quaternary ammonium compounds in normalizing this process.**

Pis'ko GT, Kolomoets MIu, Meshchishen IF, Vasiliuk VN. *Lik Sprava* 1998;3:52-56.

Regulation of lipid peroxidation is realized not only by antioxidant enzymes but by natural antioxidants as well. We have lately succeeded, together with the students, in identifying antioxidant properties of quaternary ammonium compounds, which fact makes it possible for the above properties to gain extensive applicability in a setting where there is this variety of disbolism. One of such drug preparations is ethonium. The article contains information about uses of ethonium in the tablet dose form. The tablets are of little toxicity, they stimulate the oxidation-reduction processes and proved to be effective in experimental gastric and duodenal ulcers.

# Abstracts

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## Recently Published Abstracts

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### **Suppression of mouse skin tumor promotion and induction of apoptosis in HL-60 cells by *Alpinia oxyphylla* Miquel (Zingiberaceae).**

Lee E, Park KK, Lee JM, et al. *Carcinogenesis* 1998;19:1377-1381.

There have been considerable efforts to search for naturally occurring substances for the intervention of carcinogenesis. Many components from dietary or medicinal plants have been identified that possess substantial chemopreventive properties. An example is curcumin (*Curcuma longa* Linn., Zingiberaceae), which has been shown to inhibit tumor promotion in experimental carcinogenesis. *Alpinia oxyphylla* Miquel, another plant of the ginger family used in oriental herbal medicine, contains diarylheptanoids whose structures are analogous to that of curcumin. In the present study, we have tested *A. oxyphylla* for its ability to suppress tumor promotion. Thus, topical application of the methanolic extract of dried fruits of *A. oxyphylla* significantly ameliorated 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced skin tumor promotion as well as ear edema in female ICR mice. In another study, treatment of HL-60 cells with the methanolic extract of *A. oxyphylla* significantly reduced the viability of the cells and also inhibited DNA synthesis. Microscopic examination of the treated cells showed characteristic morphology of apoptosis. Furthermore, cells treated with the extract of *A. oxyphylla* exhibited internucleosomal DNA fragmentation in time- and concentration-dependent manners. TPA-stimulated generation of superoxide anion in differentiated HL-60 cells was also blunted by *A. oxyphylla*. Taken together, these findings suggest that *A. oxyphylla* possesses potential chemopreventive and antitumorigenic activities.

### **Telomerase inhibition, telomere shortening, and senescence of cancer cells by tea catechins.**

Naasani I, Seimiya H, Tsuruo T. *Biochem Biophys Res Commun* 1998;249:391-396.

Animal in vivo studies and human epidemiological observations indicated potent anticancer effects for tea. Here we demonstrate that epigallocatechin gallate (EGCG), a major tea catechin, strongly and directly inhibits telomerase, an enzyme essential for unlocking the proliferative capacity of cancer cells by maintaining the tips of their chromosomes. Telomerase inhibition was elaborated in a cell-free system (cell extract) as well as in living cells. In addition, the continued growth of two representative human cancer cell lines, U937 monoblastoid leukemia cells and HT29 colon adenocarcinoma cells, in the presence of nontoxic concentrations of EGCG showed life span limitations accompanied with telomere shortening, chromosomal abnormalities, and expression of the senescence-associated beta-galactosidase. It is suggested that telomerase inhibition could be one of the major mechanisms underlying the anticancer effects of tea.

### **Glutathione peroxidase in amyotrophic lateral sclerosis: the effects of selenium supplementation.**

Apostolski S, Marinkovic Z, Nikolic A, et al. *J Environ Pathol Toxicol Oncol* 1998;17:325-329.

The activity of glutathione peroxidase (GSH-Px) as well as the activities of other antioxidative enzymes: CuZn superoxide dismutase (CuZn SOD), catalase (CAT), glutathione reductase (GR) in erythrocytes, as well as the activity of plasma glutathione transferase (GST), and the plasma content of vitamins E and C were evaluated in 35 sporadic amyotrophic lateral sclerosis (sALS) patients. The results revealed significantly decreased activity of both GSH-Px and CuZn SOD in sALS patients compared with the control. These data showed that a disturbed oxidative/antioxidative balance in sALS patients exists not only in motoneurons but also in the blood. The effect of exogenously administered selenium (Se), antioxidants, amino acids, a Ca<sup>2+</sup> channel blocker such as nimodipine, and their combination in Alsamin was evaluated by screening parameter levels after 9 weeks of treatment. Only the use of all components together enhanced the activity of GSH-Px and the amount of vitamin E in sALS patients. Judging by the results of clinical trials, this treatment slowed the course of the disease.

**Selenium (Se) deficiency in women with ovarian cancer undergoing chemotherapy and the influence of supplementation with this micro-element on biochemical parameters.**

Sieja K. *Lancet*  
1998;352:772-776.

**BACKGROUND:** Infections are an important cause of morbidity and mortality in patients with multiple trauma. Studies in both animals and human beings have suggested that glutamine-enriched nutrition decreases the number of infections. **METHODS:** Patients with multiple trauma with an expected survival of more than 48 h, and who had an Injury Severity Score of 20 or more, were randomly allocated glutamine supplemented enteral nutrition or a balanced, isonitrogenous, isocaloric enteral-feeding regimen along with usual care. Each patient was assessed every 8 h for infection, the primary endpoint. Data were analysed both per protocol, which included enteral feeding for at least 5 days, and by intention to treat. **FINDINGS:** 72 patients were enrolled and 60 received enteral feeding (29 glutamine-supplemented) for at least 5 days. Five (17%) of 29 patients in the glutamine-supplemented group had pneumonia compared with 14 (45%) of 31 patients in the control group ( $p<0.02$ ). Bacteraemia occurred in two (7%) patients in glutamine group and 13 (42%) in the control group ( $p<0.005$ ). One patient in the glutamine group had sepsis compared with eight (26%) patients in the control group ( $p<0.02$ ). **INTERPRETATION:** There was a low frequency of pneumonia, sepsis, and bacteraemia in patients with multiple trauma who received glutamine-supplemented enteral nutrition. Larger studies are needed to investigate whether glutamine-supplemented enteral nutrition reduces mortality.

**Results from an international case-control study of childhood brain tumors: the role of prenatal vitamin supplementation.**

Preston-Martin S, Pogoda JM, Mueller BA, et al.  
*Environ Health Perspect*  
1998;106:887-892.

An international case-control study of primary pediatric brain tumors included interviews with mothers of cases diagnosed from 1976 to 1994 and mothers of population controls. Data are available on maternal vitamin use during pregnancy for 1051 cases and 1919 controls from eight geographic areas in North America, Europe, and Israel. Although risk estimates varied by study center, combined results suggest that maternal supplementation for two trimesters may decrease risk of brain tumor (odds ratio [OR] 0.7, 95% confidence interval [CI] 0.5-0.9), with a trend of less risk with longer duration of use ( $p$  trend = 0.0007). The greatest risk reduction was among children diagnosed under 5 years of age whose mothers used supplements during all three trimesters (OR 0.5, CI 0.3-0.8). This effect did not vary by histology and was seen for supplementation during pregnancy rather than during the month before pregnancy or while breast feeding. These findings are largely driven by data from the United States, where most mothers took vitamins. The proportion of control mothers who took vitamins during pregnancy varied tremendously: from 3% in Israel and France, 21% in Italy, 33% in Canada, 52% in Spain and 86 to 92% at the three U.S. centers. The composition of the various multivitamin compounds taken also varied: the daily dose of vitamin C ranged from 0 to 600 mg, vitamin E ranged from 0 to 70 mg, vitamin A ranged from 0 to 30,000 IU, and folate ranged from 0 to 2000 micrograms. Mothers also took individual micronutrient supplements (e.g., vitamin C tablets), but most mothers who took these also took multivitamins, making it impossible to determine potential independent effects of these micronutrients.

### **Prevention of alloxan-induced diabetes mellitus in the rat by silymarin.**

Soto CP, Perez BL, Favari LP, Reyes JL. *Comp Biochem Physiol C Pharmacol Toxicol Endocrinol* 1998;119:125-129.

Silymarin is a free-radical scavenger and a membrane stabilizer which prevents lipoperoxidation and its associated cell damage in some experimental models. It has been proposed that lipid peroxidation caused by free radicals may be involved in alloxan-induced diabetes mellitus. Alloxan elicits pancreatic lipid peroxidation which precedes the appearance of hyperglycemia in mice. We studied the effects of silymarin on rat pancreas, the effect of this flavonoid on pancreatic, hepatic and blood glutathione (GSH) together with the pancreatic malondialdehyde concentrations in response to alloxan. On its own, silymarin increases pancreatic and blood GSH without changes in either hepatic GSH or in blood glucose. Silymarin prevents the increase in lipid peroxidation produced by alloxan. It also blunts the sustained increment in plasma glucose induced by alloxan. We suggest that silymarin has a protective effect on the pancreatic damage in experimental diabetes mellitus. This may be related to its antioxidative properties and to the increase in concentrations of plasma and pancreatic glutathione.

### **Curcumin attenuation of acute adriamycin myocardial toxicity in rats.**

Venkatesan N. *Br J Pharmacol* 1998;124:425-427.

The protective effect of curcumin on acute adriamycin (ADR) myocardial toxicity was analysed in rats. ADR toxicity, induced by a single intraperitoneal injection (30 mg kg<sup>-1</sup>), was revealed by elevated serum creatine kinase (CK) and lactate dehydrogenase (LDH). The level of the lipid peroxidation products, conjugated dienes and malondialdehyde, was markedly elevated by ADR. ADR caused a decrease in myocardial glutathione content and glutathione peroxidase activity. In contrast, cardiac catalase activity was increased in ADR rats. Curcumin treatment (200 mg kg<sup>-1</sup>, seven days before and two days following ADR) significantly ameliorated the early manifestation of cardiotoxicity (ST segment elevation and an increase in heart rate) and prevented the rise in serum CK and LDH exerted by ADR. ADR rats that received curcumin displayed a significant inhibition of lipid peroxidation and augmentation of endogenous antioxidants. These results suggest that curcumin inhibits ADR cardiotoxicity and might serve as novel combination chemotherapeutic agent with ADR to limit free radical-mediated organ injury.

**Mechanism of action and value of N-acetylcysteine in the treatment of early and late acetaminophen poisoning: a critical review.**

Jones AL. *J Toxicol Clin Toxicol* 1998;36:277-285.

**INTRODUCTION:** The mechanism of action of N-acetylcysteine in early acetaminophen poisoning is well understood, but much remains to be learned of the mechanism of its possible benefit in acetaminophen poisoning presenting beyond 15 hours. **METHODS:** Selective review of medical literature. N-acetylcysteine should be used in all cases of early acetaminophen poisoning where the plasma acetaminophen concentration lies “above the line;” which line is chosen depends on individual preference and whether enzyme induction is suspected. Particular care should be taken with the use of the nomogram for patients with chronic excess ingestion of acetaminophen or for those who have taken slow-release formulations. **CONCLUSIONS:** While there is a trend suggesting a beneficial effect of N-acetylcysteine in some patients presenting beyond 15 hours, further research is necessary to establish just how effective N-acetylcysteine is, particularly in patients presenting with fulminant hepatic failure. Candidate mechanisms for a beneficial effect include improvement of liver blood flow, glutathione replenishment, modification of cytokine production, and free radical or oxygen scavenging. Hemodynamic and oxygen delivery and utilization parameters must be monitored carefully during delayed N-acetylcysteine treatment of patients with fulminant hepatic failure, as unwanted vasodilation may be deleterious to the maintenance of mean arterial blood pressure.

**Effects of magnesium supplementation in hypertensive patients: assessment by office, home, and ambulatory blood pressures.**

Kawano Y, Matsuoka H, Takishita S, Omae T.

*Hypertension* 1998;32:260-265.

An increase in magnesium intake has been suggested to lower blood pressure (BP). However, the results of clinical studies are inconsistent. We studied the effects of magnesium supplementation on office, home, and ambulatory BPs in patients with essential hypertension. Sixty untreated or treated patients (34 men and 26 women, aged 33 to 74 years) with office BP >140/90 mm Hg were assigned to an 8-week magnesium supplementation period or an 8-week control period in a randomized crossover design. The subjects were given 20 mmol/d magnesium in the form of magnesium oxide during the intervention period. In the control period, office, home, and average 24-hour BPs (mean $\pm$ SE) were 148.6 $\pm$ 1.6/90.0 $\pm$ 0.9, 136.4 $\pm$ 1.3/86.8 $\pm$ 0.9, and 133.7 $\pm$ 1.3/81.0 $\pm$ 0.8 mmHg, respectively. All of these BPs were significantly lower in the magnesium supplementation period than in the control period, although the differences were small (office, 3.7 $\pm$ 1.3/1.7 $\pm$ 0.7 mmHg; home, 2.0 $\pm$ 0.8/1.4 $\pm$ 0.6 mmHg; 24-hour, 2.5 $\pm$ 1.0/1.4 $\pm$ 0.6 mm Hg). Serum concentration and urinary excretion of magnesium increased significantly with magnesium supplementation. Changes in 24-hour systolic and diastolic BPs were correlated negatively with baseline BP or changes in serum magnesium concentration. These results indicate that magnesium supplementation lowers BP in hypertensive subjects and this effect is greater in subjects with higher BP. Our study supports the usefulness of increasing magnesium intake as a lifestyle modification in the management of hypertension, although its antihypertensive effect may be small.

**Green tea epigallocatechin gallate shows a pronounced growth inhibitory effect on cancerous cells but not on their normal counterparts.**

Chen ZP, Schell JB, Ho CT, Chen KY. *Cancer Lett* 1998;129:173-179.

(-)-Epigallocatechin gallate (EGCG), a catechin polyphenol compound, represents the main ingredient of green tea extract. Although EGCG has been shown to be growth inhibitory in a number of tumor cell lines, it is not clear whether the effect is cancer-specific. In this study we compared the effect of EGCG on the growth of SV40 virally transformed WI38 human fibroblasts (WI38VA) with that of normal WI38 cells. The IC<sub>50</sub> value of EGCG was estimated to be 120 and 10 microM for WI38 and WI38VA cells, respectively. Thus, EGCG at 40 microM completely inhibited the growth of WI38VA cells, but had little or no inhibitory effect on the growth of WI38 cells. Similar differential growth inhibition was also observed between a human colorectal cancer cell line (Caco-2), a breast cancer cell line (Hs578T) and their respective normal counterparts. EGCG at a concentration range of 40-200 microM induced a significant amount of apoptosis in WI38VA cultures, but not in WI38 cultures, as determined by terminal deoxynucleotidyl transferase assay. After exposure to EGCG at 200 microM for 8 h, more than 50% of WI38VA cells in a confluent culture became apoptotic. In contrast, less than 1% of WI38 cells displayed apoptotic labeling under the same condition. EGCG did not affect the serum-induced expression of c-fos and c-myc genes in normal WI38 cells. However, it significantly enhanced their expression in transformed WI38VA cells. It is possible that differential modulation of certain genes, such as c-fos and c-myc, may cause differential effects of EGCG on the growth and death of cancer cells.

### **The effect of oral selenium supplementation on human sperm motility.**

Scott R, MacPherson A, Yates RW, et al. *Br J Urol* 1998;82:76-80.

**OBJECTIVES:** To determine whether the decline in selenium intake and selenium status in men in the West of Scotland might be a contributory factor to male subfertility. **PATIENTS AND METHODS:** Two semen samples were collected from patients attending a subfertility clinic and those patients with samples showing reduced motility were invited to participate in an ethically approved double-blind clinically controlled trial with informed consent. Sixty-nine patients were recruited and received either placebo, selenium alone or selenium plus vitamins A, C and E daily for 3 months. A further semen sample was collected at the end of the trial. Plasma selenium status was determined at the beginning and end of the trial period, as was total sperm density and motility. **RESULTS:** Plasma selenium concentrations were significantly ( $P < 0.001$ ) higher in both selenium-treated groups than in controls. No significant effect of treatment on sperm density was recorded. Sperm motility increased in both selenium-treated groups, in contrast to a slight decline in the placebo group, but the difference was not significant. However, as the provision of additional vitamins had no effect on any variable measured it was considered justified to combine the two selenium-treated groups and compare them with the placebo treatment. On this basis, selenium treatment significantly ( $P < 0.002$ ) increased plasma selenium concentrations and sperm motility ( $P = 0.023$ ) but sperm density was again unaffected. Five men (11%) achieved paternity in the treatment group, in contrast to none in the placebo group. **CONCLUSION:** This trial confirms the result of an earlier study, that selenium supplementation in subfertile men with low selenium status can improve sperm motility and the chance of successful conception. However, not all patients responded; 56% showed a positive response to treatment. The low selenium status of patients not supplemented again highlights the inadequate provision of this essential element in the Scottish diet.

### **Effective treatment of cobalamin deficiency with oral cobalamin.**

Kuzminski AM, Del Giacco EJ, Allen RH, et al. *Blood* 1998;92:1191-1198.

Because cobalamin deficiency is routinely treated with parenteral cobalamin, we investigated the efficacy of oral therapy. We randomly assigned 38 newly diagnosed cobalamin deficient patients to receive cyanocobalamin as either 1 mg intramuscularly on days 1, 3, 7, 10, 14, 21, 30, 60, and 90 or 2 mg orally on a daily basis for 120 days. Therapeutic effectiveness was evaluated by measuring hematologic and neurologic improvement and changes in serum levels of cobalamin (normal, 200 to 900 pg/mL) methylmalonic acid (normal, 73 to 271 nmol/L), and homocysteine (normal, 5.1 to 13.9 micromol/L). Five patients were subsequently found to have folate deficiency, which left 18 evaluable patients in the oral group and 15 in the parenteral group. Correction of hematologic and neurologic abnormalities was prompt and indistinguishable between the 2 groups. The mean pretreatment values for serum cobalamin, methylmalonic acid, and homocysteine were, respectively, 93 pg/mL, 3,850 nmol/L, and 37.2 micromol/L in the oral group and 95 pg/mL, 3,630 nmol/L, and 40.0 micromol/L in the parenteral therapy group. After 4 months of therapy, the respective mean values were 1,005 pg/mL, 169 nmol/L, and 10.6 micromol/L in the oral group and 325 pg/mL, 265 nmol/L, and 12.2 micromol/L in the parenteral group. The higher serum cobalamin and lower serum methylmalonic acid levels at 4 months posttreatment in the oral group versus the parenteral group were significant, with  $P < .0005$  and  $P < .05$ , respectively. In cobalamin deficiency, 2 mg of cyanocobalamin administered orally on a daily basis was as effective as 1 mg administered intramuscularly on a monthly basis and may be superior.

### **Schizophrenia and impaired homocysteine metabolism: a possible association.**

Susser E, Brown AS, Klonowski E, et al. *Biol Psychiatry* 1998;44:141-143.

**BACKGROUND:** An increased risk of both schizophrenia and neural tube defects was observed in a birth cohort exposed to famine during early gestation. Neural tube defects have been related to a folate-sensitive genetic defect in homocysteine metabolism. If this were also true for schizophrenia, then cases with low folate (LF)—and only these cases—should have increased homocysteine levels compared with controls. **METHODS:** We compared homocysteine levels of schizophrenia cases and normal controls with low folate (LF) and without low folate (non-LF). Low folate was defined by the bottom tertile for controls. **RESULTS:** In the LF group (6 cases, 8 controls), mean homocysteine was 10.7 microM in cases compared with 7.7 microM in controls ( $p = .03$ ). In the non-LF group (11 cases, 16 controls) mean homocysteine did not differ for cases and controls. **CONCLUSIONS:** These pilot data are compatible with the hypothesis that a folate-sensitive defect in homocysteine metabolism contributes to cases of schizophrenia.

### **Acute antihypertensive effects of calcium channel blockers are not affected by calcium supplementation in patients with essential hypertension.**

Sato K, Dohi Y, Miyagawa K, Kojima M. *Jpn Heart J* 1998;39:347-353.

The study was designed to investigate whether the acute antihypertensive effects of calcium channel blockers are affected by calcium supplementation in patients with essential hypertension. The antihypertensive effects of calcium channel blockers (oral manidipine or intravenous nicardipine) were studied before and during calcium supplementation (1200 mg/day for 8 weeks) in 30 hospitalized patients with essential hypertension. The averages of systolic and diastolic blood pressure during a 24-hour period were not decreased by calcium supplementation. The acute antihypertensive effects of the calcium channel blockers nicardipine (0.25, 0.5, 1.5, 2.0 micrograms/kg/min, intravenous infusion) or manidipine (20 mg, once a day, orally) were not enhanced by calcium supplementation. Thus, calcium channel blockers can be safely combined with calcium supplementation in terms of blood pressure.

**Effects of folic acid and vitamin B6 supplementation on women with hyperhomocysteinemia and a history of preeclampsia or fetal growth restriction.**

Leeda M, Riyazi N, de Vries JI, et al. *Am J Obstet Gynecol* 1998;179:135-139.

**OBJECTIVE:** Our purpose was to assess the incidence of hyperhomocysteinemia in patients with a history of preeclampsia or fetal growth restriction, to evaluate the effects of vitamin supplementation on the methionine loading test, and to study the course of subsequent pregnancies in women with hyperhomocysteinemia and a history of preeclampsia or fetal growth restriction. **STUDY DESIGN:** A total of 207 consecutive patients with a history of preeclampsia or fetal growth restriction was tested for hyperhomocysteinemia. Thirty-seven were found to be positive and were treated with folic acid and vitamin B6, and 27 had a second methionine loading test after vitamin supplementation. Fourteen patients became pregnant again while receiving vitamins and aspirin. **RESULTS:** All patients who underwent a methionine loading test after vitamin supplementation had a completely normalized methionine loading test. Of the 14 pregnancies in women receiving vitamins and aspirin, 7 were complicated by preeclampsia. Birth weights were 2867 +/- 648 g compared with 1088 +/- 570 g in the previous pregnancies. **CONCLUSIONS:** Vitamin B6 and folic acid correct the methionine loading test in patients with hyperhomocysteinemia. Perinatal outcome in patients with a history of preeclampsia or fetal growth restriction and hyperhomocysteinemia appears to be favorable.

### **Recommended dietary allowance of folic acid is insufficient for optimal homocysteine levels.**

Brouwer DA, Welten HT, van Doormaal JJ, et al. *Ned Tijdschr Geneeskd* 1998;142:782-786.

**OBJECTIVE:** To determine the effect of short term supplementation of vitamin B6 (pyridoxine) followed by folic acid in apparently healthy volunteers on the fasting plasma homocysteine concentrations (hyperhomocysteinaemia is an independent risk factor for premature atherosclerosis). **DESIGN:** Prospective, descriptive. **SETTING:** Academic Hospital Groningen, the Netherlands. **METHODS:** Apparently healthy Dutch volunteers, aged 20-75 years, were supplemented with vitamin B6 1 mg/kg/day during 7 days followed by folic acid 5 mg/day during another 7 days. On days 0, 7 and 14 the fasting plasma homocysteine concentrations were measured. A change of an individual's plasma homocysteine level was considered statistically significant if the change in percentage exceeded 2.8 times the sum of the analytical and the intraindividual biological variation. **RESULTS:** There were 103 participants, 45 males and 58 females, with average ages of 43 and 44 years, respectively (on day 7, data were available on 101 participants). Baseline folic acid concentrations of all participants were above the lower limit of the reference range. Eight and two of them had vitamin B6 and vitamin B12 concentrations below the reference range, respectively. Plasma homocysteine was inversely related to plasma levels of folic acid and vitamin B12 at that moment. During vitamin B6 supplementation the mean plasma homocysteine level did not change; one participant exhibited a significant plasma homocysteine decrease. During folic acid supplementation the mean plasma homocysteine decreased from 11.7  $\mu\text{mol/l}$  (SD: 5.6) to 9.1 (SD: 3.4); 40 participants (40%) exhibited significant plasma homocysteine decreases. At the end of the study plasma homocysteine was still related to plasma vitamin B12. **CONCLUSION:** The folic acid status of the participants at baseline was not associated with the lowest plasma homocysteine levels. Since atherosclerosis risk may increase continuously with increasing plasma homocysteine, it may be wise to keep plasma homocysteine levels as low as possible. To reach this goal, the recommended dietary allowance of folic acid may have to be increased.

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### **A cross-sectional study of vitamin intake in postoperative non-small cell lung cancer patients.**

Jatoi A, Daly BD, Kramer G, Mason JB. *J Surg Oncol* 1998;68:231-236.

**BACKGROUND AND OBJECTIVES:** This cross-sectional study of postoperative non-small cell lung cancer (NSCLC) patients examined possible effects of vitamin intake and folate status on disease-free survival. **METHODS:** Supplemental vitamin usage, dietary vitamin intake (Willett Food Frequency Questionnaire), red blood cell (RBC) folate, and serum folate concentrations were assessed in patients with a history of NSCLC. Exclusion criteria included factors that alter folate status or that are associated with altered nutritional habits: (1) evidence of cancer on history, physical, or chest radiograph; (2) tobacco, alcohol ingestion (>2 drinks/ day), or cancer treatment within 3 months; (3) use of folate antagonists; and (4) age <60 years. **RESULTS:** 36 subjects were evaluated. The median disease-free censored survival was 24 months (range 4-41). Nineteen of 36 patients (53%) reported vitamin supplementation. Vitamin users had a longer median censored survival compared with nonusers (41 months versus 11 months;  $P = 0.002$ ). With adjustment for cancer stage, the association between RBC folate and censored survival ( $r = 0.35$ ;  $P = 0.055$ ) and between serum folate and censored survival ( $r = 0.32$ ;  $P = 0.083$ ) approached statistical significance. **CONCLUSIONS:** NSCLC patients who took vitamin supplements were more likely to be long-term survivors in the patients studied; a similar trend toward long-term survival was seen among patients with higher circulating folate concentrations.

# Abstracts

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## Recently Published Abstracts

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### **Glycine accelerates recovery from alcohol-induced liver injury.**

Yin M, Ikejima K, Arteel GE, et al. *J Pharmacol Exp Ther* 1998;286:1014-1019.

Glycine prevents hepatic damage caused by hypoxia-reoxygenation, diminishes mortality due to endotoxin and minimizes alcoholic liver injury by decreasing blood ethanol. Our purpose was to investigate the effect of dietary glycine during recovery from early alcohol-induced injury, using a model that mimics the clinical presentation and histopathology with alcoholics. Male Wistar rats were exposed to ethanol continuously for 6 wk via intragastric feeding that resulted in typical histology of alcoholic liver injury, including steatosis, inflammation, necrosis and increased serum levels of aspartate aminotransferase and alanine aminotransferase. After cessation of ethanol, one group of rats received a control diet, the other a glycine-containing diet for 2 wk. During this period, all parameters studied tended to return to baseline values. However, serum aspartate aminotransferase and alanine aminotransferase recovered about 30% more rapidly in rats fed glycine. Further, the hepatic pathology score was also significantly lower in the glycine group than in controls (0.5 vs. 2.6). After 1 wk, steatosis was reduced significantly more in the glycine group (5.6%) than in controls (8.9%). Glycine also diminished numbers of infiltrating leukocytes and necrotic cells significantly more than in controls. This beneficial effect of glycine may be partly explained by the fact that glycine increased influx of chloride into Kupffer cells leading to diminished tumor necrosis factor-alpha production. These results indicate that a glycine containing diet expedites the process of recovery from ethanol-induced liver injury and may lead to its clinical application in alcoholic hepatitis.

**Prevention of hyperlipidemic acute pancreatitis during pregnancy with medium-chain triglyceride nutritional support.**

Mizushima T, Ochi K, Matsumura N, et al. *Int J Pancreatol* 1998;23:187-192.

**CONCLUSION:** A combination of diet therapy, nutritional support with medium-chain triglycerides (MCT), and well-planned preterm Cesarean delivery on demand is an effective measure to prevent gestational hyperlipidemic pancreatitis and leads to successful childbirth. **BACKGROUND:** Prevention and therapy of gestational hyperlipidemic pancreatitis are important, although difficult, because the condition carries a high maternal and fetal morbidity and mortality. **RESULTS:** We describe a 32-yr-old female with lipoprotein lipase-deficient familial hypertriglyceridemia who had recurrent episodes of acute pancreatitis. The third episode occurred with worsened hyperlipidemia 7 yr earlier at 32 wk of her first pregnancy and resulted in fetal death. The fourth and fifth episodes were also accompanied by marked hyperlipidemia probably caused by drug discontinuance and dietary noncompliance. She became pregnant. Serum triglyceride levels were controlled below 2000 mg/dL by strict monitoring with low-fat, low-calorie diet and MCT nutritional support. A premature but healthy infant was born by Cesarean delivery at 36 wk of gestation when the mother presented with mild abdominal pain and was found to have uterine contractions. The ensuing clinical course has been uneventful.

# Abstracts

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## Recently Published Abstracts

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### **The role of carnitine and carnitine supplementation during exercise in man and in individuals with special needs**

Brass EP, Hiatt WR. *J Am Coll Nutr* 1998;17:207-215.

Carnitine is critical for normal skeletal muscle bioenergetics. Carnitine has a dual role as it is required for long-chain fatty acid oxidation, and also shuttles accumulated acyl groups out of the mitochondria. Muscle requires optimization of both of these metabolic processes during peak exercise performance. Theoretically, carnitine availability may become limiting for either fatty acid oxidation or the removal of acyl-CoAs during exercise. Despite the theoretical basis for carnitine supplementation in otherwise healthy persons to improve exercise performance, clinical data have not demonstrated consistent benefits of carnitine administration. Additionally, most of the anticipated metabolic effects of carnitine supplementation have not been observed in healthy persons. The failure to demonstrate clinical efficacy of carnitine may reflect the complex pharmacokinetics and pharmacodynamics of carnitine supplementation, the challenges of clinical trial design for performance endpoints, or the adequacy of endogenous carnitine content to meet even extreme metabolic demands in the healthy state. In patients with end stage renal disease there is evidence of impaired cellular metabolism, the accumulation of metabolic intermediates and increased carnitine demands to support acylcarnitine production. Years of nutritional changes and dialysis therapy may also lower skeletal muscle carnitine content in these patients. Preliminary data have demonstrated beneficial effects of carnitine supplementation to improve muscle function and exercise capacity in these patients. Peripheral arterial disease (PAD) is also associated with altered muscle metabolic function and endogenous acylcarnitine accumulation. Therapy with either carnitine or propionylcarnitine has been shown to increase claudication-limited exercise capacity in patients with PAD. Further clinical research is needed to define the optimal use of carnitine and acylcarnitines as therapeutic modalities to improve exercise performance in disease states, and any potential benefit in healthy individuals.

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### **Maintenance therapy with colloidal bismuth subcitrate reduces duodenal ulcer relapse.**

Bardhan KD, Singh S, Morris P, et al. *Ital J Gastroenterol Hepatol* 1997;29:128-134.

**AIM:** To investigate the efficacy and safety of daily low-dose colloidal bismuth subcitrate in reducing duodenal ulcer relapse. **DESIGN:** Double-blind, double-dummy group comparative clinical trial with random allocation. **Healing Phase:** colloidal bismuth subcitrate 240 mg twice daily vs ranitidine 150 mg twice daily for up to 12 weeks. **Maintenance Phase:** nightly, colloidal bismuth subcitrate 120 mg vs ranitidine 150 mg vs placebo for up to 12 months (high-risk patients received active treatment only). **Assessment:** clinical, endoscopy, random blood bismuth levels (and rapid urease test for *Helicobacter pylori* in a subgroup). **PATIENTS:** 194 with active duodenal ulcer. **OUTCOME:** Cumulative healing at 12 weeks was 93% on colloidal bismuth subcitrate (of 92 patients) and 97% on ranitidine (of 102 patients). Relapse at 1 year was significantly less on active treatment as follows: placebo (50 patients) 60%; ranitidine (71 patients) 21%; colloidal bismuth subcitrate (64 patients) 33%. This was independent of the results of the rapid urease test which was positive in 78%, 88% and 76% of the patients respectively. Treatment was well tolerated. The highest median blood bismuth level (mcg/L) was 25 in the healing phase and fluctuated between 6 and 10 in the maintenance phase. **CONCLUSIONS:** Colloidal bismuth subcitrate, 120 mg nightly, is effective in reducing duodenal ulcer relapse and is well tolerated.