Nutrition et de l'Alimentation/CNAM, Paris. TI:Background And Rationale Behind The SU.VI.MAX Study, a prevention trial using nutritional
P; Preziosi P; Roussel AM; Arnaud J; Richard MJ; Malvy D; Paul-Dauphin A; Briancon S; Favier A AD:Institut Scientifique et Technique de la
carcinogenic potentials of trace elements. A few chemoprevention trials with trace elements have now been conducted. NO:8 TI:Trace
alterations of carcinogen metabolism, and apoptosis of the initiated cells. However, epidemiologic studies have failed to support the
explain how trace elements could reduce the incidence of a number of different cancers. The proposed mechanisms involve the antioxidant
peroxidase activity was noted. Trace elements and antioxidant enzymes in liver homogenates remained unchanged. Oestrone treatment
urinary excretion caused by impaired cellular metabolism. It is not clear whether the loss of trace elements via the urine has any
elements were investigated in 12 patients before and after treatment with cisplatin. In serum, the mean post-treatment concentrations of
compounds in foods. Randomized clinical trials have not shown significant protective effects of beta-carotene, but have found protective
effects of: alpha-tocopherol against prostate cancer; mixtures of retinol/zinc and beta-carotene-alpha-tocopherol/selenium against stomach cancer; and selenium against total, lung, and prostate cancers. Cohort studies provide little evidence that vitamin supplements are associated with cancer. Case-control studies have reported an inverse association between bladder cancer and vitamin A; oral/pharyngeal cancer and several supplemental vitamins; and several cancers and vitamin E. A randomized clinical trial, a cohort study, and a case-control study have all found inverse associations between colon cancer and vitamin E. Overall, there is modest evidence for protective effects of nutrients from supplements against several cancers. Future studies of supplement use and cancer appear warranted; however, methodologic problems that impair ability to assess supplement use and statistical modeling of the relation between cancer risk and supplement use need attention. NO:4 AU:Taylor PR; Abarbanel, I; Faargard, Y; Gavras, H; Puhan, A; Teague, J; Northern Manhattan Cancer Prevention Project. TI:Clinical question [editorial; comment] SO:Cancer Causes Control. 1997 Sep. 8(5). P 685-7. CM:Comment on: Cancer Causes Control 1997 Sep;8(5):786-802 NO:5 AU:Pezonaga I; Taylor A; Dobrota M TI:The Effects Of Platinum Chemotherapy On essential trace elements. SO:Eu J Cancer Care (Engl). 1996 Jun. 5(2). P 122-6. AB:The effects of cisplatin chemotherapy on the metabolism of essential trace elements were investigated in 12 patients before and after treatment with cisplatin. In serum, the mean post-treatment concentrations of Cu 913.91 mumol 1-1, Zn (9.57 mumol 1-1) and Mg (0.54 mumol 1-1) were significantly reduced compared with the pre-treatment levels 919.35, 11.86 and 0.67) while Se, caeruloplasmin and C-reactive protein concentrations were unaltered. Urinary excretion of Cu, Mg and Zn were enhanced. The urinary N-acetyl-beta-D-glucosaminidase activity (a marker of proximal renal tubular dysfunction) was also increased and suggests that the mechanism for decrease of certain trace elements in serum during treatment could be increased urinary excretion caused by impaired cellular metabolism. It is not clear whether the loss of trace elements via the urine has any implication for the clinical status of cancer patients treated with cisplatin. NO:6 AU:Gauchez AS; Rondel J; Fernandes-Carlos T; Jacrot M; Guiraud P; Coudray C; Calop J; Favier A AD:Groupe de Recherche et d'Etudes sur les Pathologies Oxydatives (GREPO), La Tronche, France. TI:Effect Of Oestrone On The Natural killer (NK) cell activity, antioxidant status and tumour growth in athymic mice xenografted with human tumours. SO:Anticancer Res. 1996 Mar-Apr. 16(2). P 853-9. AB:Natural killer (NK) cells have been described as being very sensitive to oxidative stress. Thus it has been previously shown that chronic administration of oestrone in drinking water of athymic mice xenografted with a wide variety of human tumours, increases their growth and development. In this study an investigation was made to see whether oestrone supplementation could influence the NK cell activity by changes in the antioxidant defences which result in an oxidative stress and influence the proliferation of tumours. Supplementary oestrone was administered in drinking water of athymic mice xenografted with two different human tumours which lack oestrogen receptors: a bladder carcinoma and a small-cell lung carcinoma. The growth of the urothelial carcinoma was poorly affected by oestrone, but oestrone significantly (p<0.01) increased the proliferation of the small-cell lung carcinoma. The average uterus weight was increased by 62% in oestrone treated mice with no modifications in plasma zinc and selenium status, nor in erythrocyte copper zinc superoxide dismutase level. Nevertheless a slight decrease in erythrocyte glutathione peroxidase activity was noted. Trace elements and antioxidant enzymes in liver homogenates remained unchanged. Oestrone treatment also had no effect on plasma and liver lipid peroxides. The immune response was evaluated by measuring NK activity of splenocytes against 51Cr labelled YAC-1 target cells. A 35.5% decrease in the NK activity (p<0.001) was observed after oestrone treatment and may be responsible for graft tolerance. However, the results of these experiments seem to exclude the role of oxidative stress in the modulation of NK activity. NO:7 AU:Koyama H AD:Department of Environmental Health Sciences, Tohoku University School of Medicine. TI:[Trace Elements: Mechanistic Aspects Of Anticarcinogenic action] SO:Nippon Rinsho. 1996 Jan. 54(1). P 52-8. AB:Trace elements play important roles and are increasingly recognized as versatile anticarcinogenic agents. Several biologic mechanisms have been proposed to explain how trace elements could reduce the incidence of a number of different cancers. The proposed mechanisms involve the antioxidant potential of trace元素 dependent enzyme system, induction of metallothionein, effects on immune response and DNA repair system, alterations of carcinogen metabolism, and apoptosis of the initiated cells. However, epidemiologic studies have failed to support the hypothesis that enhanced trace element status reduces the risk of cancer. Furthermore, several animal and in vitro studies have shown carcinogenic potentials of trace elements. A few chemoprevention trials with trace elements have now been conducted. NO:8 TI:Trace

José de Felipe Junior
"A saúde não está na farmácia, ela se encontra na quindia!"
Elements In Vascular Disease, Tumor prevention, growth and aging, and environmental studies. Proceedings of the 3rd annual meeting of the Italian Association or the Study of Trace Elements in Living Organisms. Modena, Italy, October 28-29, 1994. SO:Biol Trace Elem Res. 1996 Jan 51(1). P 1-131. NO:9 AU:Bender DA AD:Department of Biochemistry and Molecular Biology, University College London, United Kingdom. TI:Tryptophan and niacin--is there a problem? SO:Adv Exp Med Biol. 1996. 398P 565-9. NO:10 AU:Grinevich IuA; Bendug GD TI:The mechanism of the immunomodulating action of Beres Drops Plus SO:Lnk Sprava. 1995 May-Jun. (5-6). P 133-5. AB:Basic antioxidative trace element status and inflammation are therefore not major determinants of TBARS levels in normal and in pathological conditions, despite of the frequent association of low Zn and mainly low serum Se with high TBARS levels. NO:11 AU:Nishinaga J; Suzuki T; Morita M; Hayakawa M AD:National Institute for Environmental Studies, Ibaraki, Japan. TI:Trace Elements In Ribs Of Elderly patients and elemental variation in the presence of chronic diseases. SO:Sci Total Environ. 1995 Jan 162(2-3). P 239-52. AB:Element concentrations in ribs obtained from elderly Japanese people (17 males and 28 females; mean age, 81.5 years) were determined by atomic absorption spectrometry (AAS), inductively coupled plasma atomic emission spectrometry (ICP-AES), and ICP mass spectrometry (ICP-MS). Nine elements--Na, Mg, P, K, Ca, Fe, Zn, Sr, and Pb--were determinable in most of the subjects by a combination of AAS and ICP-AES. The levels of these elements were generally comparable with those obtained in our previous study on rib samples obtained from younger Japanese people (n = 125). Cu (median, 145 micrograms/g dry bone), Mn (7.8 micrograms/g), and Se (6.1 micrograms/g) were determined in all of the subjects analysed (n = 35) and 18 other elements at lower concentration levels were also detected in some of the subjects. An exploratory statistical analysis was carried out to find element(s) of which level(s) in rib vary in the presence of degenerative chronic diseases, using information obtained from pathological autopsy reports and medical histories of the present subjects. It indicated that (i) Pb and Zn, (ii) Ba, and (iii) Sr levels in the ribs varied in the presence of cancer, cerebrovascular damage, and bone problems, respectively. The present results were discussed in relation to the results of the previous epidemiologic and experimental studies.

NO:12 AU:Neve J; Wasowicz W; Quivy D; Parj N; Van Gossum A; Peretz A AD:Laboratory of Pharmaceutical Chemistry, Free University of Brussels, Belgium. TI:Lipid Peroxidation Assessed By Serum Thiobarbituric acid reactive substances in healthy subjects and in patients with pathologies known to affect trace element status. SO:Biol Trace Elem Res. 1995 Jan-Mar. 47(1-3). P 147-53. AB:Serum thiobarbituric acid reactive substances (TBARS), Zn, Cu, and Se concentrations were determined in 47 healthy adults and in patients with diseases, such as renal insufficiency, insulin-dependent diabetes mellitus, chronic pancreatitis, liver cirrhosis, or cancer, in order to clarify the relationship between this indicator of lipid peroxidation and antioxidative trace element status. TBARS levels were higher than control values in all pathological cases, except in cancer patients. Cu levels in patients highly correlated with ferroxidase ceruloplasmin activity (r = 0.86), but were only statistically different from controls in diabetics. Zn levels were lower than normal in dialysis, liver cirrhosis, and cancer patients. Se levels were significantly decreased in all pathological cases. Half of the subjects with liver cirrhosis or renal insufficiency and 3/4 of chronic pancreatitis or cancer patients had an active inflammatory process. Despite intense modifications in determined indicators, no clear correlation could be demonstrated between the different parameters. Basic antioxidative trace element status and inflammation are therefore not major determinants of TBARS levels in normal and in pathological conditions, despite of the frequent association of low serum Zn and mainly low serum Se with high TBARS levels.

NO:13 AU:Faber M; Coudray C; Hida H; Mousseau M; Favier AD AD:Laboratoire de Biochimie C, Hopital Albert Michalon, Grenoble, France. TI:Lipid Peroxidation Products, And Vitamin And trace element status in patients with cancer before and after chemotherapy, including Adriamycin. SO:Biol Trace Elem Res. 1995 Apr-May. 47(3-4). P 217-23. AB:The concentration of thiobarbituric acid reactive materials in plasma of patients with cancer was higher than in controls and was further increased after chemotherapy. Blood glutathione and plasma glutathione peroxidase activity, as well as plasma zinc and selenium in patients with cancer, were decreased, but not further modified by chemotherapy. However, only zinc and selenium levels reached a significant level. In contrast, plasma vitamin E and beta-carotene levels were not significantly increased in patients with cancer. Finally, plasma vitamin A and copper levels were not modified either in patients with cancer or by chemotherapy.

NO:14 AU:Key T AD:Cancer Epidemiology Unit, Radcliffe Infirmary, Oxford. TI:Micronutrients And Cancer Aetiology: The Epidemiological evidence. SO:Proc Nutr Soc. 1994 Nov. 53(3). P 605-14. AB:Microvitamin deficiencies occur most commonly in poor countries, and, therefore, the potential role of these factors in the carcinogenesis of human neoplasm is not yet clear. However, the recent discoveries of possible roles of vitamin and trace element deficiencies in the development of cancer together with the epidemiologic studies and the recent advances in the understanding of the mechanisms of carcinogenesis give hope that a new understanding of the role of these factors in human cancer is possible. The present review aims to summarise the evidence that these factors might play a role in the development of human cancer.


the concentration of Ca. In the plasma, the concentrations of Br, Cu, Ca, and K were significantly elevated, whereas the concentrations of Fe and Zn were found to be significantly depressed compared to the controls.

NO:17 AU:Gutteridge JM AD:Department of Anaesthesia & Intensive Care, Royal Brompton Hospital, London, England, UK. TI:Antioxidants, Nutritional Supplements And Life-threatening Diseases. SO:Br J Biomed Sci. 1994 Sep. 51(3). P 288-95. AB:Antioxidants are a complex and diverse group of molecules that protect key biological processes. They prevent oxidative stress by regulating the levels of inactivating chemical intermediates that produce the ultimate oxidant. Different sites in the body have evolved to use highly specialised strategies to deal with free radicals and other reactive oxygen intermediates. Recent epidemiological evidence suggests that the development of life-threatening disease, such as cancer and heart disease, is linked to our dietary intake of micronutrients including antioxidants. Modification of dietary habits with supplementation may provide a simple yet profound way to reduce deaths from these two major diseases. Sound scientific evidence to support a curative role for antioxidants in life-threatening diseases, however, is lacking.

NO:18 AU:Strain J J AD:Human Nutrition Research Group, University of Ulster, Coleraine, Northern Ireland, UK. TI:Putative Role Of Dietary Elements in Correlation with the Risk for Death from Cardiovascular Disease. SO:Br J Biomed Sci. 1994 Sep. 51(3). P 284-9. AB:Dietary elements in correlations with death from oxidation of blood lipids. This study shows that metals catalyse the inactivation of free radicals by reacting with inactivating chemical intermediates that produce the ultimate oxidant. Recent epidemiological evidence suggests that the development of life-threatening disease, such as cancer and heart disease, is linked to our dietary intake of micronutrients including antioxidants. Modification of dietary habits with supplementation may provide a simple yet profound way to reduce deaths from these two major diseases. Sound scientific evidence to support a curative role for antioxidants in life-threatening diseases, however, is lacking.


NO:20 AU:Sardesai VM TI:Molybdenum: An Essential Trace Element. SO:Nutr Clin Pract. 1993 Dec. 8(6). P 277-81. AB:Molybdenum is found in most foods, with legumes, dairy products, and meats being the richest sources. This metal is considered essential because it is part of a complex called molybdenum cofactor that is required for the three mammalian enzymes xanthine oxidase (XO), aldehyde oxidase (AO), and sulfite oxidase (SO). XO participates in the metabolism of purines, AO catalyzes the conversion of aldehydes to acids, and SO is involved in the metabolism of sulfur-containing amino acids. Molybdenum deficiency is not found in free-living humans, but deficiency is reported in a patient receiving prolonged total parenteral nutrition with clinical signs characterized by tachycardia, headache, mental confusion, and coma. The deficiency is due to molybdenum deficiency which is very low levels of uric acid in serum and urine (low XO activity) and low inorganic sulfate levels in urine (low SO activity). Inborn errors of isolated deficiencies of XO, SO, and molybdenum cofactor are described. Although SO deficiency is relatively benign, patients with isolated deficiencies of SO or molybdenum cofactor exhibit mental retardation, neurologic problems, and ocular lens dislocation. These abnormalities seem to be caused by the toxicity of sulfate and/or inadequate amounts of inorganic sulfate available for the formation of sulfated compounds present in the body. AO also participates in the inactivation of some toxic substances, inasmuch as studies suggest that molybdenum deficiency is a factor in the higher incidence of esophageal cancer in populations consuming food grown in molybdenum-poor soil.

NO:21 AU:Jellum E; Andersen A; Lund-Larsen P; Theodorsen L; Orjasaeter H AD:Norwegian Cancer Society, Oslo. TI:THE JANUS Serum Bank Project. SO:Sci Total Environ. 1993 Nov. 139-140P 527-35. AB:This ongoing JANUS project was initiated by the Norwegian Cancer Society in 1973. The serum bank comprises close to 0.5 million serum samples collected from 170,000 donors. From 2-16 consecutive samples are available from each donor. The sera are stored at -25 degrees C. At regular intervals the JANUS-collection is matched against the files of the Norwegian Cancer Registry. From 1973 to 1991 almost 5000 of the donors have developed some form of cancer. Frozen serum samples collected from a few months to 18 years prior to clinical recognition of their disease are consequently available for research purposes. The aim of the JANUS-project is to search in this premorbid sera for chemical, biochemical, immunological or other changes that may be indicative of cancer development at early stages. Gas chromatography-mass spectrometry and two-dimensional protein electrophoresis have been used to evaluate the stability of the frozen sera. Some recent findings are: CA125 is elevated several months prior to diagnosis of ovarian cancer; serum thyroglobulin may be a precocious tumour marker in subgroups of thyroid cancer; low level of selenium in serum reflects increased risk of thyroid cancer; and raised antibodies in serum against Epstein-Barr virus are associated with development of Hodgkin's disease. This research includes trace elements and cancers and studies on lipid profiles, diet and cancer. The serum bank may in principle be used for other purposes, e.g. in environmental studies. Analysis of sequential sera may determine chemical substances in the sera that may reflect differences in exposure to environmental pollutants in the period 1973-1991.

NO:22 AU:Stahelin HB AD:Geriatric University Clinic, Kantonsspital, Basel, Switzerland. TI:Critical Reappraisal Of Vitamins And Trace minerals in nutritional support of cancer patients. SO:Support Care Cancer. 1993 Nov. 1(6). P 295-7. AB:The potential of a high intake of micronutrients as adjuvants in cancer patients are required. Vitamin C) have proved to have no curative or life-prolonging effect. Chemotherapy and radiation increase the requirements for antioxidants defences in vivo. Epidemiological evidence linking measures of high iron nutritional status with both coronary heart disease (CHD) and cancer is accumulating, although there are few mechanisms implicating iron in these disease processes apart from acting as a pro-oxidant. In contrast, low copper nutritional status may produce oxidant effects and experimental evidence, especially from animal models of CHD, suggests that copper has an involvement in disease mechanisms which is much wider than simply an involvement in maintaining oxidant/antioxidant balance. Zinc is considered to have antioxidant effects in vivo but the role of zinc as an antioxidant, or in CHD and cancer processes, is presently unclear. Although selenium has for some time been recognised as an antioxidant nutrient, epidemiological data gathered to date linking this trace element with either CHD or cancer are inconsistent.
reference to evaluations made by the International Agency for Research on Cancer. SO: Scand J Work Environ Health. 1993. 19 Suppl 1P 67-70. AB: The monograph program of the International Agency for Research of on Cancer has evaluated many trace elements for their carcinogenicity to humans. Five groups of compounds were considered human carcinogens: arsenic and arsenic compounds, beryllium and beryllium compounds, cadmium and cadmium compounds, hexavalent chromium compounds, and nickel compounds. Antimony trioxide, cobalt and cobalt compounds, lead and inorganic lead compounds, methymercury compounds, and metallic nickel were considered probable human carcinogens. Arsenic trioxide, trivalent chromium compounds, metallic mercury, inorganic mercury compounds, selenium and selenium compounds, and titanium dioxide were not classifiable. Trace elements studied to a limited extent include copper, manganese, tin, vanadium, and zinc. Among the problems are the lack of relevant data, the definition of active species, the extrapolation of the results of experimental studies to humans, the methodological problems of epidemiologic studies, and the possible anticarcinogenic activity of some trace elements.


NO: 27 AU: Peeters EG AD: World Institute of Ecology and Cancer, Brussels, Belgium. TI: The Influence Of Soil Components And drinking water on the appearance of cancer: a review. SO: J Environ Pathol Toxicol Oncol. 1992 Jul-Aug. 11(4). P 201-4. AB: The author reviews the relationships of soil and reused water with the occurrence of cancer. The effect of the soil composition on the emergence of geocarcinogenic diseases such as cancer of the stomach, esophagus, urinary tract, breast, bronchus, pleura, and bone is analyzed. The study also reviews geocarcinogenic diseases linked with the use of recycled waste water.


NO: 29 AU: Evette I; Milton D; Mason R AD: Department of Chemistry, University College of Swansea, UK. TI: Trace Element Analysis In Body Fluids by glow discharge mass spectrometry: a study of lead mobilization by the drug cis-platin. SO: Bio Mass Spectrom. 1991 Mar. 20(3). P 153-9. AB: A method is described, using glow discharge mass spectrometry, to measure lead and platinum levels at the p.p.b. level in the urine of patients receiving cancer chemotherapy with the drug cis-platin. Using bismuth added as an internal standard, the method is found to compare very favourably with other quantitative techniques, and requires relatively little sample preparation. The data obtained support the idea that normally stored body lead is displaced by the platinum complexed in the drug, but only to a small extent.

NO: 30 AU: Flaten TP; Bolviken B AD: Department of Chemistry, College of Arts and Science, University of Trondheim, Norway. TI: Geographical associations between drinking water chemistry and the mortality and morbidity of cancer and some other diseases in Norway. SO: Sci Total Environ. 1991 Feb. 102P 75-100. AB: Finished drinking water samples were collected from 384 waterworks that supply 70.9% of the Norwegian population. For 97 municipalities where a majority of the population has had a stable drinking water supply from at least 1965, analytical results for Si, Al, Fe, Mg, Ca, Na, Mn, Cu, Zn, Ba, Sr, K, F, Cl-, Br-, NO3-, SO4(2-), pH, electrical conductivity, total organic carbon (TOC) and colour are correlated with municipal rates for morbidity of 16 groups of cancer (1975-84), and for mortality of 17 groups of other diseases (1974-83). Several associations are found, some of which may be real, while others are incidental due to the large number of correlations involved. The ecological design of this study implies that cause-and-effect interpretations should be made with great care.


NO: 33 AU: De Plazes G; Hauser SP AD: Schweizerische Krebsliga, Schweizerische Gesellschaft fur Onkologie. TI: Cancer Treatment Using Dr. Moerman's Diet and therapy. Documentation No. 24 SO: Schweiz Rundsch Med Prax. 1990 Apr 10. 79(15). P 464-7. AB: For prophylaxis of cancer and treatment of manifest cancer Moerman recommends as the basis of his therapy a lacto-vegetarian diet and, in addition, the '8 essential substances': vitamins A, B, C and E, iodine, sulfur, iron and citric acid. At a later stage he also recommends supplementary vitamin D and selenium. The most important aspect is the change in dietary habits required by the diet prescribed by Moerman and the ingestion of the '8 essential substances' in the form of conventional preparations. The daily cost of treatment of a prostatic cancer, for instance, ranges from about Fr. 3.0 to Fr. 6.0. Side effects are rare but not negligible. The diet and therapy were developed by the Dutch physician Dr Moerman (1893-1988) as long ago as the 1930s. The promoters are the iirologist J. Landman, the nutritional consultant E. Wannee and the writer R. Jochems. All three have written a book on Moerman. In Switzerland, the Lifecare Association publishes. (ABSTRACT TRUNCATED AT 250 WORDS)

NO: 34 AU: Diplock AT AD: Division of Biochemistry, United Medical School, University of London, Guy's Hospital, U.K. TI: Mineral Insufficiency And Cancer. SO: Med Oncol Tumor Pharmacother. 1990. 7(2-3). P 193-8. AB: There are excellent theoretical reasons why the mineral nutrients selenium, manganese, copper and zinc, known as the antioxidant minerals, may be involved in the prevention of cancer aetogenesis. The biochemistry is discussed of the part played by the antioxidant minerals, in the wider context of the other dietary supply 70.9% of the Norwegian population. For 97 municipalities where a majority of the population has had a stable drinking water supply from at least 1965, analytical results for Si, Al, Fe, Mg, Ca, Na, Mn, Cu, Zn, Ba, Sr, K, F, Cl-, Br-, NO3-, SO4(2-), pH, electrical conductivity, total organic carbon (TOC) and colour are correlated with municipal rates for morbidity of 16 groups of cancer (1975-84), and for mortality of 17 groups of other diseases (1974-83). Several associations are found, some of which may be real, while others are incidental due to the large number of correlations involved. The ecological design of this study implies that cause-and-effect interpretations should be made with great care.

NO: 35 AU: Fernandes G; Venkatraman J AD: Department of Medicine, University of Texas Health Science Center, San Antonio 78284-7874. TI: Micronutrient and lipid interactions in cancer. SO: Ann N Y Acad Sci. 1990. S87P 78-91.

NO: 36 AU: Drake EN 2d; Sky-Peck HH AD: Department of Chemistry, Angelo State University, San Angelo, Texas. TI: Discriminant Analysis Of Trace Element Distribution in normal and malignant human tissues. SO: Cancer Res. 1989 Aug 1. 49(15). P 4210-5. AB: Discriminant analysis of 16 trace element levels measured by ultramicro energy dispersive X-ray fluorescence in malignant and histologically normal human breast, colon, and lung tissues is shown to be a potentially valuable methodology for making malignant-normal and tissue-type classifications. Linear composites of trace elements producing optimal malignant-normal discriminations are found to differ with respect to the number and identity of elements included in the composite for breast, colon, and lung tissues. Nine-, 10-, and 11-element discriminant functions produced overall classification accuracies of 98% for breast, 100% for colon, and 100% for lung tissues, respectively. Elements found to be most important in distinguishing between malignant and normal tissues are Ca, Rb, and Zn in breast, Ca, Zn, and Fe in colon, and Fe, Mn, and Cu in lung samples. Three-group discriminations between breast, colon, and lung tissues...
were 85% accurate using trace element levels in paired malignant-normal tissues and 91% accurate using trace element levels in tumor tissues only.

NO:37 AU:Marczynski B AD:Department of Biochemistry, Silesian University, Katowice, Poland. TI:Carcinogenesis As The Result Of The deficiency of some essential trace elements. SO:Med Hypotheses. 1988 Aug. 26(4). P 239-49. AB:"Energetic" biological trace elements [gallium (III), germanium (IV), silicon (silica), arsenic (V) and selenium (IV)] occurring in DNA of eukaryotic cells may improve the semiconductor properties of DNA and may influence the mechanisms that control genetic expression at the electronic level. Their roles are postulated as follows: (i) to maintain the level and direction of free sliding electrons in DNA, (ii) to modulate the electron conductivity and hole conductivity of DNA. This specific electronic nature of DNA take the form of magnetic pigeonholes in which an electric pulse is (0), or is not (1) stored as an area of local magnetisation. These types of conductivity occurring in different parts of DNA of different cells could participate in the switch on and switch off of genetic information in gene expression. This model may help to elucidate the mechanism of action of these naturally occurring antitumor agents and may help in understanding the role of trace elements in charge transport of DNA and in carcinogenesis.


NO:41 AU:Leonard TK; Mohs ME; Watson RR TI:Nutrient Intakes: Cancer Causation And Prevention. SO:Prog Food Nutr Sci. 1986. 10(3-4). P 237-77. AB:High intakes of the macronutrients--proteins, lipids, and carbohydrates in the form of excess energy have some concern in the prevention of cancer. A wealth of data exists for macronutrients whereas most micronutrients are almost unstudied concerning their usefulness in cancer prevention at present.

NO:42 AU:Sky-Peck HH TI:Trace Metals And Neoplasia. SO:Clin Physiol Biochem. 1986. 4(1). P 99-111. AB:Numbers trace metals induce cancerous growths in various animal species in vivo and cause mutagenic or chromosomal transformations in cells-cultured cells in vitro. The most potent is probably nickel. The present review indicates that arsenic, cadmium, chromium, nickel and probably beryllium are associated with malignant neoplasms in humans. Inhibition of these metals during processing at refineries has lead to a greater incidence of pulmonary carcinoma as well as other forms of cancer. There is an inverse relationship between the amount of selenium in the environment and the death rate from cancer in humans. Evidence is presented in this review indicating that metal ions alter the fidelity of DNA synthesis. This has been demonstrated with purified DNA polymerases using both synthetic and natural DNA templates in vitro, and by mutagenic or carcinogenic effects in vivo. The need for further studies of the molecular effects of metal ions on DNA replication, RNA transcription and translation is indicated by these results.

NO:43 AU:Watson RR TI:Immunological Enhancement By Fat-soluble Vitamins, Minerals, and trace metals: a factor in cancer prevention. SO:Cancer Detect Prev. 1986. 9(1-2). P 67-77. AB:High intakes of some fat-soluble vitamin or trace metals have been associated with a decreased risk of cancer. A mechanism to help explain their anticancer action might be immunosuppression during deficiency of trace metals in conjunction with high intakes. In vitro, retinal support of T-lymphocyte functions, whereas dietary vitamin A enhanced macrophage functions. High intakes of vitamin E can enhance some antitumor, immune defenses. Selenium excess was not very suppressive of immunologic functions in vitro, but did retard tumor cell growth. Selenium and zinc deficiencies are associated with immunosuppression. Enhanced immune functions by high intakes of trace elements and vitamins provide a mechanism to explain in part the concomitant decreased cancer incidence.


NO:45 AU:Taylor A TI:Therapeutic Uses Of Trace elements. SO:Clin Endocrinol Metab. 1985 Aug. 14(3). P 703-24. AB:The properties of trace elements which feature in their therapeutic activity are: binding to macromolecules (enzymes, nucleic acids, etc.) with disturbance of biological function, and interaction with other elements. These properties, particularly the binding to large molecules, are far from specific, an observation which is reflected in the very wide range of diseases in which trace elements are employed. While metal compounds have been administered for several centuries, the scientific basis for treatment with trace elements began with the use of gold compounds, initially in patients with tuberculosis and later those with rheumatoid arthritis. Although many other drugs have been developed, some of which also include metal complexes, gold has retained an important position in the treatment of this condition. The gold-induced effects upon the immunological aspects of RA are also observed in other conditions with autoimmune involvement. The antineoplastic potential of metal complexes will be further exploited by the development of less toxic compounds--of platinum and possibly also of other metals. At the same time there are improvements in the protocols for administration which increase the range of cancers responding to treatment. Perturbation of gastrointestinal activity represents another area where trace elements have an important role, both in the enhancement of intake of nutritional needs in an if human models. It is anticipated that the use of trace elements in the treatment of cancer is going to increase in the years ahead.


NO:47 AU:Tobey RA; Tesmer JG TI:Differential Response Of Cultured Human Normal and tumor cells to trace element-induced resistance to the alkylating agent melphalan. SO:Cancer Res. 1985 Jun. 45(6). P 2567-71. AB:Previous studies using cultured Chinese hamster cells indicated that pretreatment of the cells with trace elements copper, selenium, and/or zinc resulted in increased survival of the metal-induced cultures following subsequent exposure to mono- or bifunctional alkylating agents. To ascertain whether a comparable protective response could be advented in human-derived material, a series of human normal and tumor cells was treated with these trace elements and later challenged with the alkylating agent melphalan, prior to determination of the surviving fraction via colony formation. Normal human cells derived from either newborn infants or adults exhibited an increase in survival of 7- to 9-fold when pretreated with zinc alone that increased to approximately 16-fold when these normal cells were induced with all three trace elements. In contrast, comparable pretreatment of tumor cell populations resulted in an increase in survival of 1.7-fold or less, with most types of tumors exhibiting no induced protection. These observations describing a differential inducibility of normal and tumor cells raise the possibility of a novel approach for selectively sparing normal tissue in patients undergoing treatment with alkylating agents. Possible ramifications to cancer...
chemotherapy are discussed. NO:48 AU:Petrakis NL TI:Biologic banking in cancer treatment, with special reference to blood. SO:Nat Cancer Inst Monogr. 1985 May. 67P 193-8. AB:Those who conduct cohort studies in cancer epidemiology increasingly use biochemical analyses as an important component. Some of the potentially important considerations when banked blood is used include the conditions and temperature of storage, effects of thawing, and the stability of specific substances under prolonged subfreezing temperatures. I have reviewed a selected number of biochemical substances. NO:49 AU:Roekens E; Deelstra H; Robberecht H TI:Trace Elements In Human Milk. SO:Nutr Rev. 1985 Jan-Mar. 43(1):S5-10. AB:85A; 1984 Mar. 42(3):87-91. AB: In the study of cancer patients (women, copper, Cu, Mn, Mo, Cr, Co, As, Se) composition of human milk are discussed. The mean daily intake of breast fed infants is compared with the intake of infants fed cow’s milk and with recommended dietary allowances. Parameters which can be used to check the selenium status are discussed. Clinical consequences of selenium deficiency are discussed. NO:50 AU:Vretliold A TI:[General aspects of parental feeding of patients with malignant neoplasms] SO:Vestn Akad Med Nauk SSSR. 1985. (7). P 7-14. NO:51 AU:Segal B; Segal R; Cotrau M TI:Iron Intakes In Children suffering from cancer. SO:Cancer. 1985 Jan 1. 55(1 SUPPL). P 295-300. AB:Several major factors may influence the micronutrient requirements of the patient with cancer. These factors include the metabolic state of the malignancy and its effects on the host’s nutritional status, the lifestyle (prolonged fasting), and the treatments. Antineoplastic therapy (e.g. radiation therapy or chemotherapy) can directly affect the treatment of cancer, i.e., surgery, fever and infection. Although the nutritional importance of selenium, iron, copper, and zinc is recognized, the optimal daily dose that will preserve lean body mass without enhancing tumor growth, is not known. Recommended Dietary Allowances (RDAs), where established, are based on populations with nonmalignant diseases. However, supplementation with vitamins, minerals, and certain trace elements is recommended for the cancer patient who requires prolonged parenteral support, since clinically important deficiencies of several essential nutrients (iron, ascorbic acid, alpha tocopherol, selenium, zinc, copper) is discussed. NO:54 AU:Femandes G TI:Nutritional Factors: Modulating Effects On Immune function and aging. SO:Pharmacol Rev. 1984 Jun. 36(2 SUPPL). P 123S-129S. NO:55 AU:Booman BW; Kushner RF; Dawson SC; Levin B TI:Macronutrients For Cancer Treatment And prevention. SO:J Clin Oncol. 1984 Jun. 2(6). P 702-11. NO:56 TI:Coal gasification. SO:IARC Monogr Eval Carcinog Risk Chem Hum. 1984 Jun. 34P 65-99. NO:57 TI:Coke production. SO:IARC Monogr Eval Carcinog Risk Chem Hum. 1984 Jun. 34P 101-4. NO:58 AU:Verbeke H; Bertram H; Frauscher P; Kellinghaus H; Strauch C; Vetter H TI:Clinical. 2. Eating Your Defences. SO:Nurs Mirror. 1983 Dec 14. 157(24). P 33-5. NO:61 AU:Arai K; Conley BA; Nemir P TI:Reduction Of Dithioane-reactive Granules Of Blood granulocytes in humans and rats bearing tumor. SO:Lab Clin Med. 1983 Aug. 102(2). P 286-97. AB:To confirm scattered reports suggesting a significant reduction of dithioane-reactive granules of granulocytes in neoplastic diseases, the peripheral blood of 20 normal adults, 22 patients with nonmalignant diseases, and 39 cancer patients were studied by using a modified dithizone staining method and scoring of the stained granules. The dithizone score in the cancer patients (mean score 0.001) lower than those in the normal or the noncancer patients, with mean scores of 226.0 +/- 6.3 (S.E.), 277.5 +/- 4.7, and 265.9 +/- 5.8, respectively. When compared with the lower limit (score 233) of the 95% confidence interval of a normal score distribution, 24% (61.5%) of the 39 cancer patients showed abnormally low scores, and one (2.4%) of the 42 individuals without cancer exhibited such a low score. Conclusion: Dithioane-reactive granules seem to influence the host’s immune defenses. NO:62 AU:Drucker H TI:Assessment: an overview. SO:Sci Total Environ. 1983 Jun. 28P 467-78. NO:63 AU:Robson JR TI:Vitamins And Trace Elements In Cancer Patients. SO:J Parenter Sci Technol. 1983 May-Jun. 37(3). P 87-8. NO:64 AU:Ronkudd RD; Suskrd RM TI:Iron, Zinc, And Other Trace Elements’ effect on the immune response. SO:J Pediatr Gastroenterol Nutr. 1983. 2 SUPPL 1(SUPPL 1). P S172-80. NO:65 AU:Dionigi R TI:Immunological Factors In Nutritional Assessment. SO:Hosp Pract. 1983 Jun. 41(6 Suppl 1). P S55-S71. NO:66 AU:Zumkley H; Bertram HP; Franuscher P; Kellinghaus H; Strauch C; Vetter H TI:Renal Excretion Of Magnesium And Trace elements during cisplatin treatment. SO:Clin Nephrol. 1982 May. 17(5). P 254-7. NO:67 AU:McKenna G; Wright M; Elgar M; Trotter JM TI:Role Of Trace Elements In Cancer. SO:Aust Nurses J. 1984 Feb. 13(7). P 5-6. NO:68 AU:Shah SS; Ranae SS; Phadke RS; Kasturi SR TI:Significance Of Water Proton Spin-lattice Relaxation times in normal and malignant tissues and their significance in the evaluation of the malignancy. SO:Magn Reson Med. 1983 Feb. 1(1). P 1-11. NO:69 GE:Bryan AP; McCance RA; Haynes WO TI:Energy Metabolism: A Consideration Of Potential Of Nutritional Manipulations. SO:Cancer Res. 1982. 42(2 SUPPL). P 756S-765S. AB: Perturbations of specific nutrient availability is the basis of a large number of chemotherapeutic modalities used in cancer treatment. The creation of transient nutrient deprivation states by deficient diets (deficiency), nutrient destruction or displacement (depletion), the presence of antianabolic agents or the deficiency state, or combinations of the above has shown significant antitumor effect in several animal and human cancers. Pair-fed isocaloric diets deficient in certain nutrients (amino acids, carbohydrates, lipids, vitamins, minerals) have demonstrated antitumor potential. Amino acid depletion by enzymes such as L-asparaginase or L-glutaminase has become a popular method to induce a state of amino acid deficiency. NO:70 AU:Sklar G AD:Department of Oral Medicine and Diagnostic Sciences, Harvard School of Dental Medicine, Boston, MA 02115, USA. TI:Mechanisms Of Cancer Inhibition By Anti-oxidant nutrients. SO:Oral Oncol. 1998 Jan. 34(1). P 24-9. AB: The cancer inhibitory potential of anti-oxidant micronutrients have been well established in experimental animal models and cell culture studies. Human studies have also tended to indicate an inhibition of various forms of cancer and the regression of some precancerous lesions. The biological properties of anti-oxidant micronutrients have been well established in experimental animal models and cell culture studies. Human studies have also tended to indicate an inhibition of various forms of cancer and the regression of some precancerous lesions. The biological properties of anti-oxidant micronutrients have been well established in experimental animal models and cell culture studies.
(2) stimulation of cancer suppressor genes, such as "wild type" p53, and diminished expression or dysregulation of oncogenes such as mutant p53 and H-ras; (3) inhibition of tumour angiogenesis through the inhibition of angiogenesis-stimulating factors such as TGF alpha.

Retinoic acid intervention differs, in some respects, from other micronutrient anticancer mechanisms and appears to relate to its stimulation of cellular differentiation and resultant apoptosis of neoplastic cells. Combinations of anti-oxidant nutrients have been shown to be synergistic in their anticancer activity, probably due to their optimal anticancer activity at different oxygen potentials. Selectivity in the action on cancer is also more likely to be observed with certain micronutrients. For example, the majority of studies indicate that beta-carotene is protective against prostate cancer, whereas in other tissues it may increase the risk. The protective role of beta-carotene in prostate cancer is supported by the recently observed effect of self-prescribed supplementation of vitamins C and E at adequacy of other micronutrients reduce subsequent CVD, of vitamins A, C, E, carotene and confutrients also cancer; randomized exclusive supplementation of beta-carotene +/- vitamin A or E lack benefits except prostate cancer reduction by vitamin E, and overall cancer reduction by vitamin E; randomized intervention with subsequent sacrifice of vitamin E; and ascorbic acid supplementation prevents precancerous lesions in the lungs and ascorbic acid supplementation of vitamin C and E and vitamin C and E alone decrease sickness and secondary CVD prevention. Plasma values desirable for primary prevention is: > or = 30 mumol/l lipid-standardized vitamin E (alpha-tocopherolcholsterol) or > or = 12.5 mumol/ml E alpha; > or = 50 mumol/l vitamin C aiming at vitamin C/vitamin E ratio > 2.0; or > or = 0.4 mumol/l beta- (+ or = 0.5 mumol/l alpha + beta- carotene). CONCLUSIONS: In CVD vitamin E acts as first risk discriminator; vitamin C as second; optimal health requires synergistically optimized vitamins C + E, A, carotenoids and vegetable confutrients. NO:72 TJ:cell necrosis and apoptosis in normal cells, be shown, a failure of P53 expression of the DMD C57BL/6J generating the CD45.6. SO:European Cancer Prevention Organization and National and Regional Agency of Denmark. Aarhus, Denmark, 21-24 May 1997. Abstracts. SO:Eur J Cancer Prev. 1997 Oct. 6(5). P 479-500. NO:73 AU:Maclay DJ; Aurna J; Burtschy S; Bomselle D; Leverger G; Dostalova L; Amedee-Manesme O AD:INSERM U056, Hospital Center of Bicetre, France. TI:Antioxidant Micronutrients And Childhood Malignancy During oncological treatment. SO:Med Pediatr Oncol. 1997 Sep. 29(3). P 213-7. AB:Serum antioxidant vitamins A (retinol) and E (alpha-tocopherol) concentrations were assessed in children aged 1-16 years at diagnosis and 6 months after initiation of treatment, and compared with those of 632 cancer-free children. Incident cancer cases and controls were 1-16 years old and recruited between 1986 and 1989. At diagnosis, age- and sex-adjusted serum concentrations of retinol, beta-carotene, zinc, and serum zinc in bone tumors and central nervous system malignancies. An increase during the period of treatment was found for retinol and serum zinc. Regression analysis showed a positive correlation between serum retinol and objective response rates to treatment. In conclusion, serum retinol was considered the gold standard for evaluating the preventive value of chemicals against cancer, since they control for confounding and avoid information bias. The principal school in relation to cancer control through chemoprevention is based on studies of cancer and diet. Initially, ecological studies set the cornerstone, but later case-control studies supported the hypothesis of an inverse association between foods and cancer risk (principally epithelial), suggesting that determined micronutrients participate as protection in this process. Other studies incidence provide specific growths that lead to the identification of the potential protective factors, and measurement errors. During this decade randomized intervention trials have been carried out to test this hypothesis, but conclusions have been so diverse and the designs have been so different in terms of levels of exposure, that consistent conclusions are not possible. We can conclude that using studies with randomized, double-blind, controlled designs is interesting, but problems remain to be solved, including the definition of the design endpoint. The designation of the endpoint is an important issue to consider, since some chemicals cannot compete with other preventive or therapeutic measures. NO:75 AU:Favero A; Salvi S; Russo A; Parpinel M; Negri E; Decarli A; La Vecchia C; Giaiosa A; Franceschi S AD:Servizio  di Epidemiologia, Centro di Riferimento Oncologico, Aviano, Italy. TI:The Role Of Chemoprevention In Cancer control. SO:Salud Publica Mex. 1997 Jul-Aug. 39(4). P 310-7. AB:Chemoprevention can be defined as the use of chemical compounds or medicines to prevent the occurrence of preneoplastic lesions or the development of new cancer cells. In cancer cells, two well described aspects have been considered the gold standard for evaluating the preventive value of chemicals against cancer, since they control for confounding and avoid information bias. The principal school in relation to cancer control through chemoprevention is based on studies of cancer and diet. Initially, ecological studies set the cornerstone, but later case-control studies supported the hypothesis of an inverse association between foods and cancer risk (principally epithelial), suggesting that determined micronutrients participate as protection in this process. Other studies incidence provide specific growths that lead to the identification of the potential protective factors, and measurement errors. During this decade randomized intervention trials have been carried out to test this hypothesis, but conclusions have been so diverse and the designs have been so different in terms of levels of exposure, that consistent conclusions are not possible. 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NO:76 AU:Favero A; Salvi S; Russo A; Parpinel M; Negri E; Decarli A; La Vecchia C; Giaiosa A; Franceschi S AD:Servizio  di Epidemiologia, Centro di Riferimento Oncologico, Aviano, Italy. TI:Chemoprevention: an alternative to cancer chemoprevention. SO:Biofactors. 1998. 7(1-2). P 113-74. AB:A critical and constructive review of epidemiology and supplementation data regarding cardiovascular disease and cancer. Biochemistry and Molecular Biology, University of Berne, Switzerland. TI:Vitamins E Plus C And interacting confutrients required for optimal health. SO:Biofactors. 1998. 7(1-2). P 113-74. AB:A critical and constructive review of epidemiology and supplementation data regarding cardiovascular disease and cancer. Biochemistry and Molecular Biology, University of Berne, Switzerland. TI:Vitamins E Plus C And interacting confutrients required for optimal health. SO:Biofactors. 1998. 7(1-2). P 113-74. 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AB:A critical and constructive review of epidemiology and supplementation data regarding cardiovascular disease and cancer. Biochemistry and Molecular Biology, University of Berne, Switzerland. TI:Vitamins E Plus C And interacting confutrients required for optimal health.
Epidemiology and from studies of animal carcinogenesis models for cancer-inhibiting potential of certain minerals and vitamins. These micronutrients are diverse with respect to chemical structures and physiological effects, and include calcium, selenium, carotenoids, and vitamins A, C, D and E. The dietary intake of various micronutrients has been observed to alter significantly the incidence and mortality of a variety of human cancers including those of the oesophagus, stomach, colon, breast and cervix. Studies of laboratory animal models have also provided relevant mechanistic and efficacy data on the role of specific micronutrients as well as minor non-nutrients of dietary origin in the carcinogenic process. Micronutrients and such minor non-nutrients have been found to modulate the formation and bioactivation of carcinogens, modify the promotion and progression of carcinogenesis, alter cellular and host defences, and affect cellular differentiation—ultimately leading to variations in tumour incidences. Our understanding of biochemical and biological mechanisms of carcinogenesis and of inhibition of initiation, promotion and progression by particular micronutrients—both naturally occurring forms and their synthetic analogues—has made it possible to develop strategies for clinical intervention by these agents. It is possible that intervention with individual micronutrients and minor non-nutrients, and/or with a combination of such compounds with different modes of action, will prevent, delay or reverse the process of carcinogenesis and thus reduce the incidence of and mortality due to human cancers. A number of Phase II clinical trials have been initiated with the objective of identifying and evaluating intermediate biomarkers that will be used as surrogate end points for cancer. Several surrogate end points have been standardized and validated for their specificity. The results are very encouraging. No: 79 AU: Riboli E; Slimani N; Kaaks R AD: Unit of Nutrition and Cancer, International Agency for Research on Cancer, Lyon, France. TI: Identifiability of food components for cancer chemoprevention. SO: IARC Sci Publ. 1996. (139). P 23-31.

AB: Epidemiological studies have consistently reported a reduction in risk for several cancer sites in relation to high consumption of vegetables and fruit. These findings stimulated further research aimed at identifying which compounds in fruit and vegetables are responsible for the reduction in cancer risk. Epidemiological and laboratory studies suggested that some micronutrients, particularly vitamin C, vitamin E, beta-carotene, selenium, magnesium and zinc, could reduce the risk of cancers of the oral cavity, lung, oesophagus and stomach, while dietary fibre was more specifically related to a reduced risk of colorectal cancer. However, the results of large randomized trials on various combinations of vitamins and minerals at supranutritional doses have so far failed to confirm this hypothesis or have found very weak effects. These results should stimulate profound re-thinking of the methods that led to the selection of specific molecules with potential chemopreventive action. From a methodological point of view, little attention has so far been given to four main limitations of nutritional epidemiology, which have direct bearing on the extrapolation of results from foods to food components. Measurements of micronutrient intakes through simple dietary questionnaires and current food composition tables lack precision and specificity. Micronutrient intakes are often highly correlated in nature because micronutrients tend to share the same food sources. Attribution of cancer risk to a single food constituent can be misleading if multicollinearity of dietary variables is not recognized. The etiological meaning of nutritional biomarkers is not straightforward because circulating levels of nutrients reflect not only dietary intake but also complex metabolic regulations. Studies have not considered the physical characteristics of foods, which are important determinants of physiological responses. Understanding the multidimensional nature of diet and of its relationship with different cancers is a major scientific challenge. Epidemiological studies combining detailed dietary questionnaires, appropriate food composition tables, multiple biomarkers, and appropriate statistical methods may provide better measurements of the relationships between cancer risk and specific dietary patterns and therefore contribute to the identification of food components with hitherto unforeseen potential interest for cancer prevention.