

61

DO SERUM FOLATE CONCENTRATIONS AND USE OF VITAMIN SUPPLEMENTS PREDICT CERVICAL FOLATE CONCENTRATIONS? CJ Pivathilake,* A Giuliano,* G Johanning,* K Hatch,* M Nour,* H Weiss,* DC Heimburger. Department of Nutrition Sciences and Comprehensive Cancer Center, University of Alabama at Birmingham; Arizona Cancer Center and Department of Ob/Gyn, University of Arizona, Tucson, AZ.

The question whether tissue folate deficiency enhances carcinogenesis and whether use of vitamin supplements can correct localized deficiency is emerging as an important area of research. However, little is known about the ability of blood folate levels or supplements to predict tissue levels. The purpose of this study was to define this relation in cervical tissue. Ninety patients with abnormal PAP smear results referred to the Cervical Dysplasia Clinic at the University of Arizona participated in this study. Paired cervical biopsy and serum samples from the same individuals were used to measure folate concentrations by the *L. Casei* microbiological assay. The correlation between serum and cervical tissue folate was significant ($r = 0.44$; $p < 0.001$). Multiple regression models used to estimate the variation in serum folate concentrations showed that multi-vitamin supplements significantly increased serum folate ($p = 0.001$). In spite of these associations, however, multi-vitamin supplements had no effect on tissue folate concentrations ($p = 0.91$). There was no significant confounding from use of birth control pills, grade of histology, smoking, age, parity, or HPV status. These results indicate that higher serum folate levels are associated with higher cervical tissue levels of folate. Multi-vitamin supplements do not seem to influence cervical folate levels, but the effects of higher-dose folate supplements on cervical folate levels has yet to be determined.

62

ASSOCIATION OF COPPER AND CERVICAL DYSPLASIA WITH TOTAL PLASMA HOMOCYSTEINE LEVELS. SW Thomson, DC Heimburger, PE Cornwell,* ME Turner,* HE Saubertlich, CE Butterworth, Jr. Dept. of Nutrition Sciences, University of Alabama at Birmingham.

We examined correlates of total plasma homocysteine (tHcy) in 294 subjects with cervical intraepithelial neoplasia (CIN) and 170 control subjects. Associations of tHcy with risk factors for CIN and 24 hour intakes and biochemical indices of nutrients were examined using correlation and regression analyses. Ln plasma and RBC folate and Ln plasma B_{12} were strong inverse correlates of Ln tHcy ($r = -0.35$, -0.31 , and -0.27 , respectively, $p = 0.0001$). Ln plasma copper and severity of dysplasia were positively correlated with Ln tHcy ($r = 0.14$ and 0.21 , $p = 0.003$ and 0.0001 , respectively). A stepwise regression model that included (in descending order of significance) Ln RBC folate, Ln plasma copper, grade of dysplasia, race, Ln intake PUFA, Ln plasma vitamin B_{12} , Ln intake of fat, and oral contraceptive use explained 29 percent of variation in Ln tHcy.

235 subjects with CIN were randomized to receive folic acid (10mg/day) or placebo for 6 months. Baseline mean tHcy was not different between the folate and placebo groups (9.7 ± 3.8 vs. 8.9 ± 3.3 $\mu\text{mol/L}$, $p = 0.19$). After 2, 4, and 6 months mean tHcy in the folate group (7.2 ± 1.8 , 7.0 ± 1.9 , and 7.0 ± 2.3 , respectively) was significantly lower ($p = 0.0001$, 0.0004 , and 0.0001 , respectively) as compared with baseline and with the placebo group at 2, 4, and 6 months (8.9 ± 3.1 , 8.4 ± 3.0 , and 8.9 ± 3.1 , respectively). After 2 months there was no further lowering of mean tHcy levels. Subjects in the upper four quintiles of plasma and RBC folate, as well as those in the lowest quintile (deficient or marginally deficient), had significant lowering of tHcy after 2 months of folate supplementation ($p = 0.0001$); this was sustained at 4 and 6 months. Subjects in the lowest quintile of plasma and RBC folate had significantly higher baseline tHcy than subjects in the upper four quintiles (11.16 vs. 8.98 , $p = 0.003$ and 12.13 vs. 8.83 , $p = 0.0001$ for lowest vs. upper four quintiles of plasma and RBC folate, respectively). This difference was eliminated after 2 months' supplementation (6.86 vs. 7.08 and 7.69 vs. 6.83 for lowest vs. upper four quintiles of plasma and RBC folate, respectively).

Folate, vitamin B_{12} , copper, and severity of dysplasia are associated with tHcy levels. Folate supplementation significantly lowers tHcy levels even in the absence of folate deficiency.

63

SOY INTAKE AND ORAL CONTRACEPTIVES: EFFECTS ON SEX HORMONES AND THE MENSTRUAL CYCLE. JY Rutman*, BB Dancisak*, TC Nagel*, MC Martini*, JL Slavin*, Depts of Food Sci & Nutrition and OB/Gyn, University of Minnesota, St. Paul, MN [intr by MS Kurzer]

Limited research supports that soy products high in isoflavonoid phytoestrogens lengthen the menstrual cycle and alter serum sex hormones. It is unknown if phytoestrogens in soy have any effect on menstrual function or serum sex hormones in women using oral contraceptives (OCs). The objective of this study was to determine hormonal effects of soy protein (Take Care™, 34 g/d, 20 mg genistein) in young women either on OCs ($n = 20$) or not ($n = 16$). One-third of OC users were on various triphasic pill combinations, while the rest were on various single-dose pills. This randomized, crossover design consisted of the subjects consuming their habitual diet (control) for 2 menstrual cycles and their habitual diet with soy for 2 menstrual cycles. Blood was collected from each subject during mid-follicular phase and mid-luteal phase in each menstrual cycle. Sex hormones were analyzed via radioimmunoassay in serum samples from the second menstrual cycle of each treatment. No significant differences were observed in estrone, estradiol, SHBG, DHEAS, prolactin, and progesterone concentrations with soy feeding in either the control or OC group. No changes in menstrual cycle length were seen with soy feeding in either the control or OC groups. Thus, soy consumption had no significant effect on menstrual cycle or serum sex hormones in young women who use or do not use OCs. (Supported by MN Soybean Research & Promotion Council and Protein Technologies International)

64

BLOOD FATTY ACIDS AS AN OBJECTIVE WAY TO MONITOR FATTY ACID INTAKE PL Zock*, RP Mensink*, J Harryvan*, JHM de Vries*, and MB Katan. Dept of Human Nutrition, Agricultural University, Wageningen, the Netherlands.

The fatty acid composition of serum cholesteryl esters is used as a qualitative biomarker of fatty acid intake, but quantitative data are scarce. Between 1987 and 1992, we fed various fatty acids in four controlled trials to 232 healthy volunteers, and measured the proportion of fatty acids in cholesteryl esters. Each 10% of energy fed as linoleic acid (18:2) raised the proportion ($\pm$ SD) of linoleic acid in cholesteryl esters by 9.3 ± 3.1 g/100 g fatty acids. For oleic acid (cis-18:1) this figure was 6.5 ± 1.7 g/100 g, for trans fatty acids (trans-18:1) 1.1 ± 0.5 , for stearic acid (18:0) 1.0 ± 0.4 , for palmitic acid (16:0) 1.7 ± 0.5 , for myristic acid (14:0) 2.1 ± 0.7 , and for a mixture of saturated fatty acids (12:0, 14:0 and 16:0) 2.2 ± 1.0 g/100 g.

The coefficient of variation of the responses was fairly constant, indicating that changes in intake in each of these fatty acids can be monitored with similar precision. These data can be used to estimate the degree of compliance in experimental studies involving exchanges of single dietary fatty acids. Most fatty acids in cholesteryl esters may also be used in observational studies to estimate differences in intake. However, due to multiple simultaneous differences in fatty acid intake between free-living individuals or populations, such data cannot provide information on absolute fatty acid intake.

Financial support of the Foundation for Health and Nutrition Research is gratefully acknowledged.

65

NUTRITIONAL PROTEIC-ENERGETIC STATUS OF PATIENTS AFTER ORTOGNATHIC SURGERY. SPBA Peres*, RC Burini, EP Arena, RS Macoto. Department of Nutrition, University of São Paulo, Bauru, BR.

The treatment of cleft lip and palate of congenital etiology can lead to the facial prognathism, whose correction implies on patients prolonged feeding, with thin diets, taken orally. With the aim of assessing the nutritional consequences of this post-surgery behavior were studied 23 patients (Age: 13-34), 12 males and 11 females attended at the Research and Rehabilitation Hospital of Labio-Palatal Injuries - São Paulo University (Bauru - SP). The evaluation of the energetic-protein state, by means of anthropometric methods (weight, height, circumference, skin folds and derivatives measures, biochemicals (protein and plasmatic amino acid, dietetics (food intake), was carried in 3 stages: pré-surgery (M_1), post-surgery intra-hospital ($M_2 = 7-9$ days), late post-surgery ($M_3 = 25-40$ days), along with the monitoring of glucemia, hematocrit, hemoglobin, leukogram and alpha-1-acid glycoprotein. The nutritional classification obtained by the results combination of 3 anthropometric parameters (body mass index, triceps skin fold and arm muscle circumference), 2 laboratorials (albumin and lymphocyte) revealed that 3 patients presented in M_1 some degree of protein-energetic malnutrition (PEM). In M_2 there was totally protein deficiency albumin, hemoglobin, hematocrit and transtretin with alpha-1-acid glycoprotein increase expected on surgical trauma, hemoreducing and inflammation in parallel, there was also nutritional deficiency in 13 patients two out of them with severe protein-energetic malnutrition. In M_3 the food intake offered less than 30 kcal/kg and about 0.50 g protein/kg a day. With the withdrawal of maxillomandibular fixation (M_3) the daily food intake was 50-60 kcal/kg (2.2 to 2.9 protein/kg). The value of laboratorial variables were normalized however without the recovery of eutrophy in malnourished patients in M_3 . Thus the study concluded presenting 7 patients (30% of the sample). Yet with PEM (severe or mild) 4 out of them in consequences post-surgery behavior it was concluded there fore in the face of the surgical trauma intensely, currently post-surgery protocol especially intra-hospital is inefficient in preserving and/or recovering the good nutritional state of the patients.

66

NUTRITIONAL HEALTH PERCEPTIONS AND CVD RISK FACTORS ON A PREPARED MEAL PLAN. D.C. Hattin and the Vanguard Study Group. Oregon Health Sciences University, Portland, OR.

An individual's perception of how well he/she is following a dietary protocol may be a useful indicator of subject adherence. In the present study we tested the hypothesis that positive nutritional health perceptions would be inversely correlated with risk factors for cardiovascular disease (CVD) in a population of subjects with hypertension, dyslipidemia, or NIDDM. Subjects ($n = 251$) were participating in a clinical trial designed to assess the effects of two different medically prescribed diets on CVD risk factors and quality of life. The diets were comparable in terms of their nutritional goals but differed in the method of reaching those goals. One diet was a prepared nutrient-fortified meal plan (CCNW; $n = 127$) and the other was a usual care self-selected diet (SSD; $n = 124$). Both plans provided approx. (% energy) 20-25% fat, 15-20% protein and 55-60% carbohydrate. The Nutritional Health Perceptions Scale, an instrument specifically designed for the clinical trial, was used to quantify nutritional health perceptions twice during a 4 week baseline period and at week 10 of the 10 week dietary intervention. Blood pressure, total cholesterol, and hemoglobin A_{1c} were measured at weeks -4, 0, 8 and 10. The results indicate that both groups perceived an increase in the healthiness of their diets from baseline to week 10 ($p < 0.0001$) with the CCNW group having the greatest increase in nutritional health perceptions ($p < 0.001$). In the SSD group the correlations with between nutritional health perceptions and cholesterol ($r = -0.31$) and hemoglobin A_{1c} ($r = -0.32$) were significant ($p < 0.01$) as were the correlations with blood pressure (-0.26 , $p < 0.01$) and cholesterol (-0.23 , $p < 0.05$) in the CCNW group. The close association between nutritional health perceptions and risk factor reduction may be related to the individuals' knowledge of how well they followed the dietary prescription. These observations suggest that the Nutritional Health Perceptions Scale may serve as a surrogate for adherence to dietary prescriptions when more formal dietary histories are not available.