

## **Preliminary results from The Ovarian Nutrition Education (ONE) study**

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### **ABSTRACT**

Guidelines for cancer prevention suggest that a diet high in fruit and vegetables and low in animal protein is associated with a reduction of risk for most cancers and may improve cancer survival. The aim of this study was to determine if fruit/vegetable concentrate supplementation is associated with similar improvements in plasma biomarkers and anthropometric indicators than a diet high in fiber and low in fat among a sample of ovarian cancer survivors. Initially there were a total of 52 women (85% White; Mean age = 53 years) participants with an adherence rate of roughly 73%. Twenty-seven women were randomized to Juice Plus diet and 24 were randomized to the WHEL study diet. Mixed-effects regression models revealed that there were no significant between-group changes in anthropometric measures (i.e., BMI, weight, hip, waist, upper arm) (all  $p > 0.05$ ), whereas, significant between-group differences were observed for improvements in Serum Albumin and TIBC levels (all  $p < 0.05$ ). Near significant between-group differences were observed for vitamin B12 ( $p < 0.10$ ). These improvements were observed among Juice Plus participants. More research is needed to determine if the improvements observed by Juice Plus participants translates into meaningful clinical outcomes such as reductions in recurrence and survival.

Support: NSA (TN, USA)

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## **Adjunctive effects of a dietary supplement comprising dried whole fruit, vegetable and berry juice concentrates on clinical outcomes of treatment of periodontitis**

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### **ABSTRACT**

Periodontitis is a prevalent chronic inflammatory disease, a major cause of tooth loss and associates with systemic morbidity and mortality. Biologically, it associates with reduced local and systemic antioxidant

defences and elevated levels of oxidative stress secondary to a hyper-inflammatory neutrophil host response to plaque bacteria. This randomised, placebo-controlled, double-blind trial, aimed to assess whether adjunctive benefit could be detected with Juice Plus+® supplementation during and after standard non-surgical periodontal therapy. Primary outcomes were reduction in periodontal pocket depth (PPD) and gain in connective tissue attachment level (CAL) to teeth, 2-months post-therapy. Test interventions were fruit/vegetable (FV, n=16) and FV/berry (FVB, n=15) versus placebo (PL, n=17). Statistical analysis employed 2-tailed ANCOVA (baseline PPD and CAL as covariates) and interim data on 48 never smokers are reported. Non-surgical therapy produced significant improvements in PPD (FV = 0.86±0.4mm; FVB = 0.88±0.4mm; PL = 0.81±0.5mm) and for CAL (p<0.0001). Despite such large improvements, additional benefit was seen for PPD with FV (p<0.03) and FVB (p<0.04) supplementation versus PL, and a trend towards additional gains in CAL with FV (p=0.07). Thus, adjunctive Juice Plus+® may offer additional therapeutic benefit to standard non-surgical periodontal therapy. Support NSA (TN, USA)  
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## **The effect of mixed fruit and vegetable concentrates on biomarkers of cardiovascular disease: a review of the clinical evidence**

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### **ABSTRACT**

Increased intake of fruit and vegetable (FV) has been associated with a reduced risk of chronic diseases, including cardiovascular disease (CVD). However, public health campaigns to increase FV intake have had limited success. A variety of mixed FV concentrates are available in the marketplace which may help certain individuals to achieve FV intake recommendations. However, the possible CVD benefits of FV concentrates have not been systematically reviewed. Our purpose, therefore, was to review the clinical trials that have studied the effects of these concentrates on CVD risk factors. A systematic search of EMBASE and MEDLINE databases identified 12 randomized, controlled clinical trials of 2 weeks duration or longer, which reported on at least one CVD risk factor. These studies assessed markers of oxidative stress (e.g. protein carbonyls, interleukin-6), endothelial function and homocysteine. Daily consumption of FV concentrates significantly increased serum concentrations of antioxidant vitamins in 5 of 6 studies and significantly improved at least one marker (oxidative stress, endothelial function, homocysteine) of CVD risk in 10 of 12 studies. While longer term studies are required, these data indicate that FV concentrates may be of benefit in terms of improving antioxidant vitamin status, decreasing oxidative stress and reducing certain risk factors for CVD. (The study is not funded)  
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# **Supplement with encapsulated vegetable and fruit juice powder concentrate improves microcirculation and ultrastructure in human skin**

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## **ABSTRACT**

**Aim:** To determine changes in skin physiological parameters during the intake of vegetable and fruit juice powder concentrate (JPC) vs. placebo capsules over 12 wk. Changes in microcirculation, hydration properties, transepidermal water loss (TEWL), and changes in ultrastructure of the skin (thickness and density) were determined.

**Methods:** Microcirculation measurements were performed with an O2C device (Lea Instruments, Giessen, DE). Hydration was assessed by Corneometer CM 825. Barrier function of the skin, TEWL, was measured on a Tewameter (Courage & Khazaka Electronics, Cologne, DE) and skin thickness and density using ultrasound (B-Scan, Dermascan C, Cortex Technology, DK).

**Subjects:** 52 female (age 40–65) subjects were randomly assigned in a double blind fashion to either the JPC group or placebo group. All tests were performed at baseline, wk 6 and wk 12.

**Results:** Percent change and significance ( $p < 0.05$ ) were assessed. At wk 12, compared to placebo, the JPC group had:

1. Significant improvement of microcirculation by 36% (flow 1 mm depth),
2. Significant improvement of the skin thickness by 6% and skin density by 17%, and
3. Significant increase of skin hydration by 9% and a decrease of TEWL by 4% (ns).

**Conclusion:** The JPC group had improved skin microcirculation and ultrastructure, skin hydration and barrier function. The placebo group showed no significant changes. Support: NSA (TN, USA)  
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# **Attenuation of common cold symptoms by encapsulated juice powder concentrate**

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## **ABSTRACT**

**Introduction:** Dietary supplements have been suggested as preventive strategies for common cold, but previous results were inconsistent. This study aimed to assess the effect of a dietary supplement from fruits and vegetables on common cold symptoms in healthy healthcare professionals.

**Methods:** This was a randomized double-blind placebo-controlled trial. Subjects were taking four capsules of dietary supplement (Juice Plus+®) or matching placebo daily for eight months, including a two month run-in period. We report means and 95% confidence intervals (CI) for the number of days with at least moderate common cold symptoms (primary endpoint) and number of days with any common cold symptoms. Differences between groups are analyzed with ANOVA.

**Results:** A total of 543 subjects were included, with 529 valid for primary analysis (intervention: 263, placebo: 266). The mean number of days with at least moderate common cold symptoms was 7.6 (95% CI 6.5–8.8) in the intervention and 9.5 (8.4–10.6) in the placebo group (P=0.023). The mean number of days with any common cold symptoms was 29.4 (25.8–33.0) in the intervention and 30.7 (27.1–34.3) in the placebo group (P=0.616).

**Conclusion:** Intake of a dietary supplement from fruits and vegetables was associated with a reduction of moderate or severe common cold symptoms, but not with a reduction of total days with common cold symptoms. Research support: NSA (TN, USA)

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## **EFFECTS OF NUTRACEUTICAL SUPPLEMENTATION ON RESPIRATORY FUNCTION IN HEALTHY HEAVY SMOKERS**

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### **ABSTRACT**

It's well established that cigarette smoking is associated with reduced pulmonary function. The effects of two different encapsulated formulas, consisting primarily of mixed juice powder concentrate (Juice Plus+®) were evaluated in a randomized, placebo controlled, double-blind study; spirometry indexes (in particular, Forced Expiratory Volume in 1 s, FEV1; Forced Expiratory Flow at 25% of forced vital capacity, FEF 25; CO Diffusion Lung per unit Alveolar Volume, DLCO/VA) were measured, at baseline and after 3 months' supplementation, in 101 healthy heavy smokers (>20 cigarettes/d, duration  $\geq$ 10y, median age 47; 41–57 y, 63 M, mean capsule compliance 85.2%) randomized into three groups: A- placebo; B-fruit/vegetable; and, C-fruit/vegetable/berry.

Statistical analysis was performed by t-test for paired data.

Our results showed a significant improvement in FEF 25 ( $p < 0.05$ , adjusted by smoking duration) in group C compared to group A. Group A showed a worsening respiratory function, probably due to seasonal factors (bronchitis, allergies); however, selecting subjects on the basis of compliance  $> 95\%$  and  $79\% < FEV1 < 105\%$  (range of normal value), our study highlighted a slight improvement in DLCO/VA in group C (mean delta values  $\pm$  standard deviation =  $5.1 \pm 4.96$ ) and in FEV1 in group B ( $0.41 \pm 4.66$ ). These data show improvements with both experimental formulas compared to placebo. Support: NSA, Collierville, TN

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## **EFFECT OF NUTRITION SUPPLEMENTS ON MALONDYALDEHYDE CONCENTRATIONS IN HEAVY SMOKERS**

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### **ABSTRACT**

Long-term cigarette smoking can cause lipid peroxidation generating molecules such as malondialdehyde (MDA). MDA exists both in free form (fMDA), chemically active and potential damaging agent, and bound (bMDA), excreted in urine, index of an old injury.

To evaluate effects of two different encapsulated formulas, consisting of primarily mixed juice powder concentrate, a randomized double blind placebo-controlled study was performed on 101 heavy smokers ( $> 20$  cigarettes/d, duration  $> 10$ y, median age 47; 41–57 y, 63 M) before and after 3-m supplementation. Subjects were randomized into three groups, well matched for sex and age: A-placebo; B-fruit/vegetable; C-fruit/vegetable/berry. In 75 (46 M) compliant ( $> 95\%$ ) subjects plasma total MDA (tMDA = fMDA + bMDA) and fMDA concentrations were measured by gas chromatography-mass spectrometry with isotopic dilution and bMDA was calculated.

Median values were compared (t-test for paired data); data are reported as mean delta values ( $\pm$  standard deviation).

Compared to placebo both active groups showed a significant decrease in fMDA levels accompanied by a slight increase in bMDA concentrations, probably due to fMDA conjugation. Support: NSA, Collierville, TN

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# **SIGNIFICANT DECREASE IN HOMOCYSTEINE AND ox-LDL IN HEALTHY HEAVY SMOKERS AFTER NUTRACEUTICAL SUPPLEMENTATION**

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## **ABSTRACT**

Nutraceuticals may attenuate some negative effects of cigarette smoking. We evaluated effects of two different encapsulated formulas, consisting primarily of mixed juice powder concentrate (Juice Plus+®), in a randomized placebo controlled, double-blind study on 101 heavy smokers (>20 cigarettes/d, duration  $\geq$ 10y, median age 47; 41–57 y, 63 M, mean capsule compliance 85.2%). Smokers were divided into 3 groups: A-placebo, B-fruit/vegetable, C-fruit/vegetable/berry. Serum and erythrocyte folate (s-fol and ery-fol, respectively) and total homocysteine (tHcy) concentrations were measured before and after 3-m supplementation. In 75 (46 M) compliant (>95%) subjects, lipid panel parameters (total Cholesterol, tChol; LDL-c; oxidized-LDL, ox-LDL) were evaluated. Median values were compared (t-test for paired data); data are reported as mean delta values ( $\pm$  standard deviation). Intervention with both nutraceutical formulations resulted in reduction in ox-LDL and tHcy compared to placebo. Support: NSA, Collierville, TN

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