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Late- Breaking Abstracts

Title: Plasma Carotenoid Levels before and after Supplementation with a Mixture of Vegetable Oleoresins

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ABSTRACT

OBJECTIVE: To determine the changes in beta-carotene, alpha-carotene, lycopene (all-trans and cis forms), lutein, zeaxanthin, alpha- and beta-cryptoxanthin and retinol in healthy volunteers given a daily supplement of carotenoids from a mixture of vegetable oleoresins.

METHODS: Twenty-four men and women volunteers ate low carotenoid diets for 2 weeks, and then supplemented these diets with carotenoids (Table 1) from a mixture of vegetable oleoresins (carrot, tomato, spinach and red bell pepper).

Supplementation continued for the next 4 weeks. Fasting blood samples for carotenoid analysis were collected at the beginning of the study (baseline), after 2 weeks on the low carotenoid diet (depletion) and weekly thereafter.

RESULTS: After 2 weeks on the low carotenoid diet, plasma concentrations of all carotenoids fell except for zeaxanthin. However, the difference was significant ($p < 0.05$) only for cis- and all-trans lycopene. After supplementation, plasma levels of alpha- and beta-carotene, alpha- and beta-cryptoxanthin, lutein and zeaxanthin were significantly higher than at both baseline and after depletion (Table 2). Lycopene plasma levels remained lower than at baseline but they were significantly higher than after depletion. There were no changes in retinol plasma levels throughout the study.

CONCLUSION: Supplementation of carotenoids from a mixture of vegetable oleoresins has a rapid and important influence on plasma concentrations. The increase in plasma carotenoid levels is noteworthy considering that these carotenoids were supplemented at levels that could be found in a diet high in fruits and vegetables.

TABLE 1. Daily Carotenoid Supplement and Plasma Carotenoid Concentration in Subjects at Baseline, after Depletion, 2 and 4 Weeks of Supplementation

| Carotenoid | Supplement mg/day | Baseline | Depletion | Plasma Levels (umol/L) | |
|-----------------|----------------------|----------|-----------|------------------------|--------|
| | | | | Week 2 | Week 4 |
| a-carotene | 2.50 | 0.1298 | 0.1044 | 0.3022 | 0.3883 |
| b-carotene | 5.00 | 0.4342 | 0.3117 | 0.6792 | 0.8169 |
| lutein | 0.50 | 0.2288 | 0.1957 | 0.2650 | 0.2648 |
| zeaxanthin | 1.20 | 0.0863 | 0.0951 | 0.1356 | 0.1286 |
| a-cryptoxanthin | 0.10 | 0.0568 | 0.0543 | 0.0654 | 0.0759 |
| b-cryptoxanthin | 0.80 | 0.2781 | 0.1929 | 0.5356 | 0.6630 |
| cis lycopene | 0.60 | 0.3613 | 0.2355 | 0.2844 | 0.3147 |
| lycopene | 1.00 | 0.3639 | 0.1771 | 0.2202 | 0.2509 |