

Vitamins C, E and Selenium Disappoint in Major Randomized Controlled Trials

G. Douglas Andersen, DC, DACBSP, CCN

When I came across the latest findings from the Physicians' Health Study II, [evaluating vitamins E and C in the prevention of prostate and total cancer in men](#),¹ and the [Selenium and Vitamin E Cancer Prevention Trial \(SELECT\)](#),² it occurred to me that the negative results join a growing list of recently published randomized controlled trials (RCTs) on vitamins that have *not* confirmed what has been suggested via small and/or observational study data.

Physicians' Health Study Findings

"Vitamin E and C in the Prevention of Prostate and Total Cancer in Men"¹ and "[Vitamin E and C in the Prevention of Cardiovascular Disease in Men](#),"³ both published in *JAMA*, were RCTs done concurrently on 1,461 medical doctors ages 50 and older. The studies lasted 10 years and compared groups taking vitamin E (400 IU every other day), vitamin C (500 mg daily), vitamin E and C or a placebo. Neither study showed that either supplement (alone or in combination) reduced cancer risk, cardiovascular disease or all-cause mortality. [See Tables 1-3.]

| Intervention | Subjects | Mortality |
|----------------------|----------|-----------|
| Vitamins C and E | 3,656 | 442 |
| Vitamin E, placebo C | 3,659 | 399 |
| Vitamin C, placebo E | 3,673 | 415 |
| Placebo | 3,653 | 405 |

| Intervention | Subjects | Total Cancers | Prostate Cancers |
|----------------------|----------|---------------|------------------|
| Vitamins C and E | 3,656 | 493 | 238 |
| Vitamin E, placebo C | 3,659 | 491 | 256 |
| Vitamin C, placebo E | 3,673 | 480 | 270 |
| Placebo | 3,653 | 479 | 245 |

| Intervention | Subjects | Total Events | Fatal Events |
|----------------------|----------|--------------|--------------|
| Vitamins C and E | 3,656 | 310 | 127 |
| Vitamin E, placebo C | 3,659 | 310 | 131 |

| | | | |
|----------------------|-------|-----|-----|
| Vitamin C, placebo E | 3,673 | 309 | 129 |
| Placebo | 3,653 | 316 | 122 |

SELECT Findings

A total of 35,533 men in their 50s with low prostate specific antigen levels and negative digital rectal examinations from 427 locations qualified for the RCT known as "SELECT," findings from which were also published in *JAMA*. Of those men, 34, 888 were included in the primary analysis, making it the biggest cancer prevention RCT ever done. After five years of taking either 400 IU vitamin E plus 200 mcg selenium, 400 IU vitamin E plus placebo, 200 mcg selenium plus placebo or two placebo pills daily, the results [see Table 4] did not confirm what had been unexpected findings in earlier studies - including data derived from the famous beta carotene study on smokers, which discovered that vitamin E reduced prostate cancer in men who were heavy smokers. [See Andersen G.D. "Is Beta Carotene Safe?" *Dynamic Chiropractic*, Sept. 23, 1994. [Article available online at \[url=http://www.dynamicchiropractic.com.\]http://www.dynamicchiropractic.com.\[/url\]](http://www.dynamicchiropractic.com)]

| Intervention | Subjects | Prostate Cancer |
|-----------------------------|----------|-----------------|
| Vitamin E, selenium | 8,703 | 437 |
| Vitamin E, placebo selenium | 8,737 | 473 |
| Selenium, placebo E | 8,752 | 432 |
| Placebo E, placebo selenium | 8,752 | 416 |

Comment

Although these latest studies are disappointing, the findings reveal that isolated micronutrients found to be high in whole-food diets that *do* reduce cancer and cardiovascular disease rates do not work as stand-alone agents when they are studied in a way that greatly reduces the odds a result is a statistical anomaly. If you stop and think about it, entities as complex as cardiovascular disease and cancer are not the type of problems one would expect to be caused by a couple of micronutrient imbalances. Next month, we'll look at how B vitamins did in their large, recently published RCTs.

References

1. Gaziano, JM, Glynn RJ, Christen WG, et al. [Vitamins E and C in the prevention of prostate and total cancer in men: the Physicians' Health Study II Randomized Controlled Trial.](#) *JAMA*, 2009;301(1):52-62.
2. Lippman SM, Klein EA, Goodman PJ, et al. [Effect of selenium and vitamin E on risk of prostate cancer and other cancers: the Selenium and Vitamin E Cancer Prevention Trial \(SELECT\).](#) *JAMA*, 2009;301(1):39-51.
3. Sesso HD, Buring JF, Christen WG, et al. [Vitamins E and C in the Prevention of Cardiovascular Disease in Men: The Physicians' Health Study II Randomized Controlled Trial.](#) *JAMA*, 2008;300(18):2123-33.

APRIL 2009