Fruits, Vegetables, and Cancer Prevention Trials

The negative results from intervention trials that sought to prevent cancer by use of \( \beta \)-carotene supplements underline the difficulty in choosing the appropriate prophylactic agent (1). Hindsight, which is of course always 20-20, should have cautioned us that the association between \( \beta \)-carotene and cancer was just that, an association, and that association does not mean causation. But have the lessons from this saga really been learned?

It appears that many researchers are of the opinion that the \( \beta \)-carotene trials failed only because the wrong carotenoid was chosen or else was given at the wrong dose. I would argue that the problem is more fundamental. As discussed elsewhere (2), only weak evidence supports a major role for antioxidants in cancer. There are other equally plausible substances in fruits and vegetables that may be responsible, for instance, folate (3) and phytochemicals (4). Prostate cancer may be a special case where the protective substance is lycopene, a carotenoid found in tomatoes (5).

Clearly, if the research strategy is to conduct intervention trials, each using one substance at one dose, then it will probably take several decades to discover an effective anticancer substance. This is especially true if there is no “magic bullet” in fruits and vegetables but rather a “team” of substances, each of which is needed for optimal effectiveness.

Accordingly, the most appropriate step may be to conduct a randomized intervention trial using a mixture of fruits and vegetables. A suitable mixture might be oranges, tomatoes, broccoli, and carrots. A placebo of similar taste and appearance could easily be formulated. In addition to this rationale, such a trial would achieve the following objectives: 1) It would prove that fruits and vegetables do indeed prevent cancer, 2) it would demonstrate the feasibility of this study design, and 3) there is strong evidence that fruits and vegetables should also prevent coronary heart disease (6) and help correct hypertension (7).

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REFERENCES


NOTES

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