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Is there a benefit from lycopene supplementation in men with prostate cancer? A systematic review

F. Haseen[1], M. M. Cantwell[1], J. M. O'Sullivan[2] and L. J. Murray[1]

[1]*Cancer Epidemiology & Prevention Research Group, Centre for Public Health, Queen's University Belfast, Belfast BT12 6BJ, UK and* [2]*Centre for Cancer Research and Cell Biology, Queen's University Belfast, Belfast BT9 7BL, UK*

Lycopene has been shown to have a chemopreventive effect against prostate cancer[(1)]. It is possible that chemopreventive agents continue to have an anti-carcinogenic role after cancer development and perhaps delay the progression of disease. However, there are limited data on post-diagnostic diet and lifestyle as predictors of prostate cancer progression. Many health professionals are unfamiliar with the effects of nutrient supplements for patients with cancer and may be unable to provide adequate guidelines. Patients often take nutritional supplements without a full awareness of the scientific evidence related to cancer prognosis[(2)]. The aim of the present systemic review was to evaluate the association between lycopene intake and prostate cancer progression in order to provide evidence-based recommendations for survivors of prostate cancer.

A systematic search was conducted on MEDLINE, EMBASE CINAHL Plus, Web of Science, AMED and CENTRAL to capture studies published up to January 2009 that examined the association between lycopene intake or supplementation and prostate cancer progression. Intervention studies involving lycopene supplementation in any form (e.g. tablet or capsule, whole tomato, tomato sauce or tomato juice) in patients with prostate cancer regardless of their disease duration, stage and treatment modalities were included. Studies examining mixed supplementation with lycopene and other nutrients and supplements were excluded.

Eight intervention studies were identified; however, five of these studies had no control group and one had an unmatched control group. The remaining two studies were randomised controlled trials (RCT); however, one was a very-short-term intervention (3 weeks) and small in size (twenty-six patients)[(3)] and the other RCT was also small (fifty-four patients) study in which lycopene was supplemented for 2 years in addition to orchidectomy[(4)]. Prostate-specific antigen (PSA; ng/ml) at 2 years was 3.0 (SD 1.9) in the intervention and 9.0 (SD 7.5) in the non-intervention arms ($P<0.001$)[(4)]. Rates of progression as measured by PSA and bone scan were also lower in the intervention group. Lycopene appears to be effective in lowering cancer-related symptoms (pain, urinary tract symptoms). No severe toxicity or intolerance related to lycopene supplementation was reported.

The evidence available is insufficient to enable a firm conclusion to be drawn in relation to lycopene supplementation in patients with prostate cancer. Larger RCT in broader patient groups are required.

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