

## CONTINUING EDUCATION

# Integrative Review of Lycopene and Breast Cancer

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**Purpose/Objectives:** To perform an integrative research analysis of the literature regarding lycopene, its antioxidant capacity, and its nutritive and physiologic effects on breast cancer.

**Data Sources:** Articles published from 1990–2004 using PubMed as the primary retrieval base.

**Data Synthesis:** Forty articles were retrieved and a dimensional analysis was performed based on Fawcett's integrative review process that focused on the following categories: antioxidant, bioavailability, breast cancer risk, and dietary factors.

**Conclusions:** Noted gaps in the literature included lack of a theoretical model and multiple nutritional variables studied that affected statistical interpretation and application. Findings suggest that additional research is needed to effectively study the specific phytochemical attributes of lycopene with regard to breast cancer.

**Implications for Nursing:** The emerging area of health-derived benefits from food sources such as lycopene requires additional inquiry into the examination of physiological and nutritional parameters. Nurses should include antioxidant therapy in their base of knowledge when caring for patients with breast cancer.

Lycopene, a phytochemical with antioxidant properties, has been placed in the spotlight by clinical researchers and the general public and has emerged as a separate point of interest from the general category of carotenoids in the areas of cardiovascular disease and cancer. Recognition of its antioxidant ability has been demonstrated consistently in the literature (Agarwal & Rao, 2000). Initial research in this arena focused on evaluation of physiologic parameters of evidence via chemical assays to note relative effects from a biochemical perspective as well as dietary interventions from a behavioral perspective. This review of research focuses on lycopene in the context of its antioxidant capacity and its nutritive and physiologic effects on breast cancer.

Breast cancer is the leading cancer diagnosed and the second leading cause of cancer death among American women and the leading cause of death among African American women (Simmonds, 2003). The number of people living with cancer is estimated to double from 2000–2050 (Simmonds). Because breast cancer is known to be a current international health problem, improving protocols of treatment and preventing recurrence are important. Although many people (both male and female) die from breast cancer, many also live with and after the diagnosis. Any possible scientific trends that could affect prevention as well as treatment of the disease should be explored.

### Key Points . . .

- ▶ The majority of studies pertinent to dietary lycopene and breast cancer from 1990–2004 had significant findings related to variable factors such as lycopene bioactivity, chemoprotective effects, and dietary consumption.
- ▶ Continued research specifically in the area of lycopene and incorporation of nutritional therapies in the care and treatment of patients with breast cancer should be included in oncology nurses' plan of care.

### Goal for CE Enrollees

To enhance the nurse's knowledge about research regarding lycopene and breast cancer risk

### Objectives for CE Enrollees

1. Discuss study findings related to the antioxidant properties of lycopene and breast cancer risk.
2. Discuss study findings related to the relationship between nutritional intake of lycopene and breast cancer risk.
3. Define limitations to the generalization of study findings related to lycopene and breast cancer risk.

### Retrieval of Studies

For the integrative research review, an initial search was performed using PubMed as the primary electronic database. The search fields and numbers of articles found included lycopene (1,279 items), antioxidant (111,797 items), nutrition (208,354

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Digital Object Identifier: 10.1188/06.ONF.127-137