



Oncology Pharmacy Newsletter

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The Oncology Pharmacy Newsletter is a biweekly publication dedicated to providing useful information for the staff treating patients who come to the Oncology Outpatient Pavilion.

We welcome questions and requests for topics.

References available upon request.

Lycopene in Prostate Cancer Patients

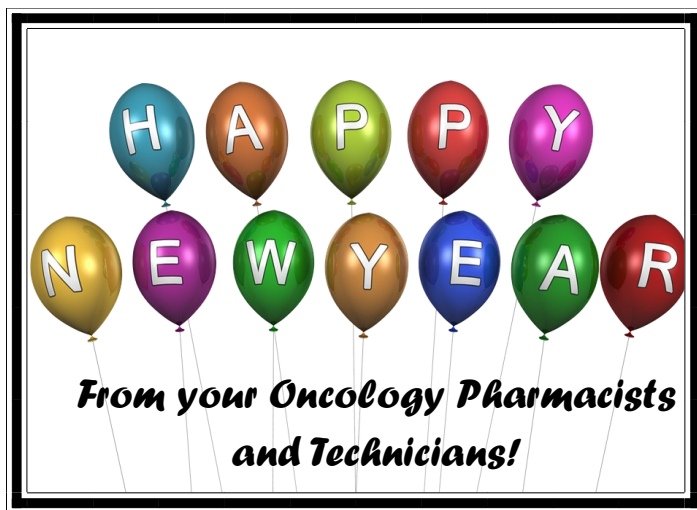
Caitlin Laurate UConn PharmD Candidate 2015

Prostate cancer is the most common cancer among men (after skin cancer) in the United States.¹ Complementary and alternative medicines have become more common in prostate cancer patients. Patients are turning to natural medicines as ways to prevent or treat disease with the misconception that natural means safe. Most patients are unaware that natural medicines do not undergo the stringent testing for safety, efficacy and standardization that traditional medications must pass. Lycopene is one of many natural supplements that have been linked to preventing prostate cancer. This column will discuss the use of lycopene in prostate cancer patients and where healthcare professionals can find accurate, unbiased information about natural medicines. *Continued....*

Pyxis ES in a new adventure for all of us. It offers some advantages in terms of inventory control and order interface with our other systems, including those yet to come. In the meantime, we are all dealing with a learning curve. Please do not hesitate to ask the Pharmacists or Pharmacy Technicians for assistance if you need it.

Some tips for improving your experience with Pyxis ES:

- Slow down! The screens and sequences of actions or information needed have changed. Take the time to read as you go.
- Be sure to use the appropriate patient admission number. Bring it with you to the machine in order to choose the correct entry.
- If you are asked to verify the count, please do so. This allows Pyxis ES to have accurate information as to inventory and will minimize stock outs based on misinformation.
- If the count is incorrect, all you need to do is insert the correct count and hit accept. A discrepancy does not occur if it is not a controlled substance.
- Recover failed drawers if they appear on the screen. This will help ensure you have access to the medications you need and is generally a very quick process.
- Resolve discrepancies as soon as they occur. It is much easier than it will be a week from now.
- Ask if you need help!



Lycopene is a carotenoid that is in high amounts in tomatoes. In vitro studies of lycopene showed that it inhibits androgen receptor expression in prostate cells and reduces prostate cancer cell proliferation.² Lycopene has been studied as a preventative agent against prostate cancer. Some epidemiological studies showed populations with a high intake of lycopene have lower incidences of prostate cancer. One study showed an inverse relationship between the intake of tomatoes and lycopene and the risk of prostate cancer.³ Studies using lycopene as treatment have shown inconsistent results. In a study of 32 men with high-grade prostate intraepithelial neoplasia (HGPIN) who ate a lycopene-rich diet (20-25mg/day) before receiving a repeat biopsy after 6 months, there was no change in baseline prostate specific antigen (PSA) levels and no decrease in the rate of progression.⁴ In another study, HGPIN patients received doses of lycopene 4mg by mouth twice a day versus no lycopene for 2 years. The patients who received lycopene had lower PSA levels and less adenocarcinomas diagnosed. The results of this study showed that lycopene slowed the progression from HGPIN to prostate cancer.⁵ More studies are needed to prove the efficacy of lycopene in preventing and treating prostate cancer.



In terms of safety, the United States Food and Drug Administration (FDA) granted lycopene designation as Generally Recognized as Safe (GRAS). Doses of 10 to 120 mg/day were shown to be well tolerated in prostate cancer patients.² However, the FDA regulates dietary supplements under different and less stringent rules than foods and drug products. Therefore, patients should obtain these supplements from reputable sources.

A few very reliable sources exist that one may use to find information on complementary and alternative medicines. The National Cancer Institute has evidence-based information for healthcare professionals available for certain therapies. It is a great resource that is focused on cancer patients. This information can be found at: <http://www.cancer.gov/about-cancer/treatment/cam/> Another unbiased source of information is the Natural Medicines Comprehensive Database. This database provides information on safety, effectiveness, adverse effects and more. This can be accessed at: www.naturaldatabase.com/. Entering the website from the UConn Health Lyman Maynard Stowe library website will allow you full access. The Memorial Sloan Kettering Cancer Center's database, About Herbs, is another great source that is available online at: <https://www.mskcc.org/cancer-care/treatments/symptom-management/integrative-medicine/herbs> or by app on Apple products.

Currently, a phase II clinical trial is being conducted by the National Cancer Institute at University of California Irvine Health/CHAO Family Comprehensive Cancer Center. The trial is evaluating the combination of docetaxel and lycopene treatment in patients with castrate-resistant prostate cancer with measurable disease who have not previously received chemotherapy. Keep an eye out!

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3. Kavanaugh, CJ et al. The U.S. Food and Drug Administration's evidence-based review for qualified health claims: tomatoes, lycopene, and cancer. *J Natl Cancer Inst*. 2007;99(14):1074-85
4. Mariani S, Lionetto L, Cavallari M et al.: Low prostate concentration of lycopene is associated with development of prostate cancer in patients with high-grade prostatic intraepithelial neoplasia. *Int J Mol Sci* 15 (1): 1433-40, 2014.
5. Mohanty NK, Saxena S, Singh UP et al.: Lycopene as a chemopreventive agent in the treatment of high-grade prostate intraepithelial neoplasia. *Urol Oncol* 23 (6): 383-5, 2005.