



# VIRGINIA PROSTATE CENTER *Newsletter*

A PARTNERSHIP PROGRAM OF EASTERN VIRGINIA MEDICAL SCHOOL AND SENTARA CANCER INSTITUTE  
Spring 1997 Paul F. Schellhammer, M.D., Editor Volume 2 Number 1

## What's in the news?

### Effects of Selenium Supplementation

In a recent issue of the *Journal of the American Medical Association*, L.C. Clark, et al., authored a study titled, "Effects of Selenium Supplementation for Cancer Prevention in patients with Carcinoma of the Skin" (*JAMA* 276:1956-1963, 1996). This study reported the results of a large, 10-year randomized trial that examined the impact of daily selenium supplementation on the risk of developing skin cancer. There proved to be no benefit in reducing skin cancer. However, selenium supplementation caused a dramatic decline in the frequency of cancers of the lung, colon and prostate. There were 63% fewer prostate cancers among the patients taking daily selenium.

How can this preventive effect of selenium be explained? Selenium acts as part of an enzyme which converts hydrogen peroxide to water. Hydrogen peroxide can damage DNA and, if not degraded, may play a role in the development of cancer.

The study in *JAMA* used selenium-containing yeast to provide a dose of 200 micrograms per day. Selenium is present in soil as a trace element. It is taken up by plants and we, therefore, obtain selenium from our food. The selenium content of soils differs markedly. Soil selenium is quite low along the East Coast and in the Pacific Northwest, but is high in the Midwest. Blood selenium levels in man are determined by the source of food supply. While 200 micrograms of selenium per day was safe for the patients in the *JAMA* study, this same dose could cause toxicity for individuals from regions with high selenium soils. Therefore, it is important to measure serum selenium levels before embarking on a program of supplementation. Blood selenium levels below 100 nanogram/ml are clearly deficient; 1,000 ng/ml has been established by the Environmental Protection Agency (EPA) as the maximum safe level. Once an individual has started oral selenium, blood levels should be monitored periodically.

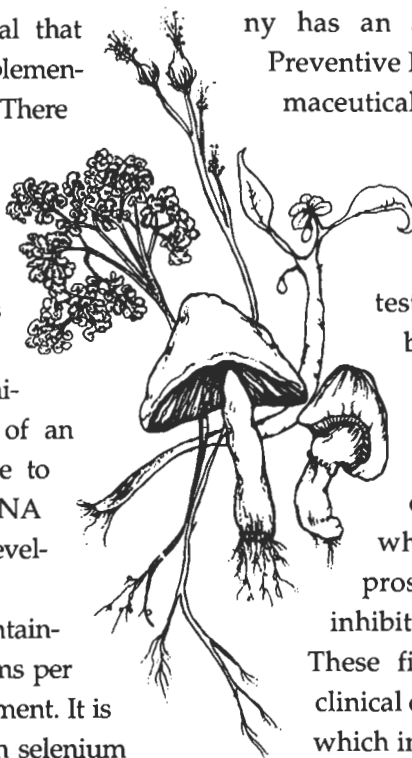
Selenium blood levels can be done for about \$40.00 per test. A general recommendation for selenium supplementation is not warranted until confirming studies are performed.

### Chinese Herbal Medicine

Scientists at the Virginia Prostate Center (VPC) have initiated studies with Paracelsian, Inc., a biotechnology company in Ithaca, New York, engaged in the discovery of pharmaceuticals from herbal sources and the development and marketing of tests for improved cancer diagnosis. The company has an agreement with the Institute of Preventive Medicine in Beijing to develop pharmaceuticals from traditional Chinese herbal medicines. PN27,1 is one of the compounds identified from Paracelsian's library of Chinese herbal medicines. In laboratory tests conducted at the VPC, PN27,1 blocked the secretion of prostate-specific antigen (PSA) and inhibited the growth of prostate cancer cells. Further investigations have demonstrated that doses of PN27,1 which effectively inhibit growth of prostate cancer cells, are minimally inhibitory to normal human cells.

These findings support historical Chinese clinical data, as well as other laboratory data, which indicate that the drug is likely to have a good margin of safety in humans and may add a new dimension in cancer chemotherapy. While the laboratory studies conducted at the VPC are encouraging, the primary objective is to demonstrate the potential benefit of PN27,1 through clinical trials in patients with advanced prostate cancer. Compassionate use trials with PN27,1, underway in a small number of patients, indicate that the drug is well tolerated in oral dosage forms for extended periods of time, raising the potential that PN27,1 may be effective in the treatment of advanced prostate cancer.

The VPC and Paracelsian have entered into a letter of intent to collaborate on extensive laboratory studies of PN27,1 and related compounds as possible treatments for advanced prostate cancer. The agreement will accelerate study of PN27,1 and its analogs as possible therapeutic agents for prostate cancer, and sponsor research to identify the biological and chemical basis for its anticancer effect.♦



Non-Profit  
Organization  
U.S. POSTAGE  
PAID  
Permit No. 335  
Norfolk, VA

P.O. Box 1980  
Norfolk, VA 23501



## Antibodies target prostate cancer

Antibodies, those proteins produced by the immune system in response to foreign substances called antigens, have been produced in mice that recognize a novel prostate cancer antigen designated prostate specific membrane antigen or PSMA. The antibody (7E11-C5.3) that recognizes PSMA was discovered by scientists at the Roswell Park Cancer Center in Buffalo, New York. Scientists at the VPC were the first to identify the PSMA molecule, and subsequent work at the VPC shows that the level of PSMA increases in prostate cancers from patients with poorly differentiated and metastatic disease. Recently VPC scientists reported that PSMA expression is markedly enhanced following hormone-deprivation therapy. These findings, together with those reported by investigators at other institutes, suggest that PSMA may have diagnostic and therapeutic applications.

One of the first potential clinical applications being evaluated is using the antibody to locate and target prostate cancer cells inside the patient's body. CYTOGEN Corporation has conducted clinical trials using the 7E11-C5.3 antibody coupled with the radioactive isotope III-Indium (the antibody-isotope complex is referred to as CYT-356) to radioactively image sites of prostate cancer. The VPC was involved in the first clinical trials to evaluate the clinical utility of this procedure. The antibody-isotope complex is injected into the patient, the antibody seeks out and binds to the cancer cells, and the location of the complex is determined by scanning the patient with a special camera, called

a gamma camera, to measure and locate areas emitting radioactivity. The clinical trials have shown that the antibody scan is more sensitive than other scanning procedures (i.e., CT and MRI) in detecting metastatic lymph node disease and recurrent disease in some patients following prostatectomy. CYTOGEN has recently received FDA approval to market CYT-356 (Prostascint®) for imaging prostate cancer. Through VPC efforts Prostascint® scanning has been initiated at Sentara Norfolk General Hospital for patients in Hampton Roads.

This same procedure can be modified to potentially provide an approach for treating advanced prostate cancer. In this case, the low radioactive isotope III-Indium is replaced with a "killer" isotope, such as 90-Yttrium or I31-Iodine. Substances, other than isotopes, could be coupled to the antibody, such as toxins or cancer drugs. The principle is the same as described above for antibody directed imaging. The antibody targets the cancer cell and in this case delivers its deadly payload. This approach has been used successfully to treat patients with Hodgkin's Disease and liver cancer. Antibody directed therapy is just beginning to be evaluated for treating advanced prostate cancer. This treatment strategy must still be regarded as highly experimental, but with further research antibody-directed therapy may one day be an effective treatment for advanced prostate cancer, especially patients whose cancer progresses after hormone therapy. ♦

**Please cut here and mail to: VIRGINIA PROSTATE CENTER, OFFICE OF DEVELOPMENT,  
EASTERN VIRGINIA MEDICAL SCHOOL, P.O. BOX 5, NORFOLK, VA 23501-0005.**

**Yes! I want to help support the Virginia Prostate Center and its efforts to find more effective treatments and hopefully a cure for prostate and other urologic cancers. (Please consider a \$5.00 donation to support publication cost and postage for circulation of this newsletter.)**

Enclosed is my contribution     Please contact me about gift opportunities to the VPC

Please type or print

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_

This gift is given:  In honor of \_\_\_\_\_  In memory of \_\_\_\_\_

Please notify: (Name:) \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_

The Eastern Virginia Medical School Foundation is certified as a tax-exempt, public charity under section 501 (C)3 of the internal revenue code. Gifts are deductible for federal income tax purposes.