



## THE BENEFITS OF PHYTONUTRIENTS: IN BONE CANCER



Bone cancer is the cancer originating primarily from the bone and its surrounding tissue. However, the most common form of cancer in the bones is from metastasis from another primary cancer at a different organ. Osteosarcoma is the most common primary bone cancer followed by chondrosarcoma, Ewing's sarcoma, fibrosarcoma and others.

Chondrosarcoma is a malignant tumor of cartilage cells and mainly affects adults between 40-60 years of age. Approximately 30-40% of all primary bone cancers are Chondrosarcomas.

This cancer develops in the chondrocytes or the cells producing cartilaginous tissue and affects mainly the legs, upper arms, shoulder blades, ribs and pelvic bones. While the exact cause of chondrosarcoma is not yet known, some are genetic diseases and pre existing non-cancerous bone or cartilage tumors pose a higher risk of developing chondrosarcoma. Surgery is generally the main treatment option for chondrosarcoma since chemotherapy or radiation therapies are not very effective and are rarely given in cases of extensive metastasis. High-grade chondrosarcoma has a poorer survival rate with only 38% of patients achieving 10-year cancer free survival.

The Dr. Rath Research Institute recently published a study using a combination of phytonutrients (green tea extract, curcumin, resveratrol, quercetin and a mixture of extracts from cruciferous vegetables such as cabbage, cauliflower, carrots and broccoli) on chondrosarcoma cells.\* The experiments were based on understanding the mechanism of the action of cancers

including cell multiplication, invasion of the basement membrane, and the potential to spread (metastasis).

In our study, we saw that the phytonutrient mixture had significant inhibitory effects on chondrosarcoma cells. Matrix metalloproteinases (MMP) are the enzymes that are secreted by cancer cells to destroy the surrounding connective tissue which allows the cancer cells to spread to other tissues and organs. The phytonutrient mixture blocked the MMP enzymes in chondrosarcoma cells and the cell migration was also 100% inhibited. Moreover, the phytonutrient combination helped in stopping the growth of chondrosarcoma cells up to 66%. When studied with specific staining methods, the cancer cells that were treated with the phytonutrient mixture demonstrated the changes leading to cell death (apoptosis).

At present, surgery is the mainstay of treatment for chondrosarcoma and that procedure only removes the tumor, it does not address the mechanistic process of the cancer. More than 90% of all cancer deaths occur due to the metastasis of cancer - therefore, focusing on stopping the metastasis is a critical step in addressing cancer. Phytonutrients, similar to many other essential micronutrients, have a variety of anti carcinogenic properties and have the potential to address critical steps in the development and spread of cancer.

\* MW Roomi et al., *Journal of Cellular Medicine and Natural Health* Oct 2017

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The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical "business with disease". It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: "Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it."

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