



## THE ANTICANCER EFFECTS OF POLYPHENOLS

### PART 2

Our last issue of our Health Science News Page focused on polyphenols, which are the nutrient compounds present in various plants that help in protecting plants from insects, diseases, pollutants, and damage from ultraviolet rays. In Part 1 we discussed a few of the important and most researched polyphenols - specifically quercetin, curcumin, green tea extract, and resveratrol - and their actions and functions in the human body.

Polyphenols help in improving the immune system and have antioxidant and anticancer properties. Currently, most of the research about their anticancer mechanisms is conducted using individual polyphenols. However, due to their poor bioavailability, individually used polyphenols are not as effective as a synergistic combination. Our work at the Dr. Rath Research Institute focuses on the synergistic action of nutrients and the fact that a specific combination of nutrients has a more pronounced effect than any of the nutrients used alone. According to our research, specifically designed combinations of polyphenols and other micronutrients help in increasing the overall efficacy while reducing doses of the individual components.

Our scientists recently published a comprehensive review chapter in the book *Nutrients*. Our chapter included the results of our in vivo and in vitro studies testing the anticancer properties of a specific combination of polyphenols.\* The combination of polyphenols used in our study included quercetin, green tea extract, turmeric root extract (curcumin), and extracts from different cruciferous vegetables such as broccoli, cauliflower, cabbage and carrots. The study results show that a combination of polyphenols was more effective in inhibiting cancer growth by affecting multiple metabolic pathways involved in carcinogenesis than when any of the compounds was used alone.

We studied the efficacy of this combination on head and neck squamous cell carcinoma cells both in vitro and in vivo. The results showed that this combination was effective in inhibiting the growth of cancer cells, and as well stopped cancer cell migration and inhibited matrix



metalloproteinase (MMP) enzymes. Additionally, the in vivo studies showed that the polyphenol combination could reduce the growth of tumors by 68% and their weight by 63%. Similar effects were observed in fibrosarcoma and melanoma cells, both of which are highly aggressive cancers. Fibrosarcoma is a cancer of the fibrous part of the connective tissue and develops mainly in the bones and surrounding muscles. The synergistic combination of polyphenols inhibited the growth of fibrosarcoma and melanoma cells up to 60-80%. In melanoma, the MMP enzymes were blocked 100% significantly reducing its potential to spread.

Earlier, we also used a polyphenol combination of green tea extract along with a combination of vitamins, amino acids, and other micronutrients in more than 50 different cancers. Such a multi-targeted approach is very rarely used in cancer research. Our studies have proven that this multinutrient combination can effectively: slow down tumor growth without damaging healthy cells, stop the spread of cancer by blocking MMP enzymes, stop the degradation of collagen tissue and strengthen it, and decrease blood supply to a tumor (angiogenesis). Our synergistic combination of micronutrients and polyphenols is shown to be effective in all steps of cancer progression. Although, potentially useful as antioxidants, the bioavailability of polyphenols can become a concern. Our other studies have shown that combining green tea extract with quercetin can significantly increase the efficacy of green tea extract.

Current cancer therapies have not been satisfactory, and are associated with dangerous side effects. Our research results show that using a combination of polyphenols and micronutrients not only stops cancer growth and spread, but also strengthens the connective tissue thereby increasing their benefits.

\* A Niedzwiecki, et al., *Nutrients*, 2016, 8, 552; DOI: 10.3390/nu8090552

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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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