

DR. Michael Mc Namara



Hydroxytyrosol: Nature's Ultimate Olive Phenolic for Preventive and Regenerative Medicine

Man has been fascinated by the olive tree – and in particular its pithy drupe– for centuries.

There are records that date back five centuries showing that man has cultivated olive trees for production and consumption of olive oil. The mighty Spartans for example, renowned for their military strength and keen interest in health, drew upon virgin olive oil in combination with organic plant products to nurture themselves. They were quite possibly the first recorded vegans in history. Their legacy speaks for itself, given how they ruled over their neighboring civilizations.

The Cretans also have records showing that they cultivated olive trees to produce olive oil for consumption since over 5000 years ago. Indeed ancient stone olive presses have been found in Crete, one of which is believed to be the oldest in all of Europe.

Long before health researchers realized that extra virgin olive oil improved the health of those who consumed it regularly, humans have realized that olives were special. The emblem of the World Health Organization, the recognized global resource for almost all collective health related decisions and guidelines today, consists of an outer wreath of crossed olive branches, indeed a major validation of olive trees and their products.

Many more instances of the significance of olives and olive trees in civilization and human culture may be cited. This is certainly not a coincidence! Olives and olive oil are special. They contain a great deal of natural compounds that bring great health and longer life to those who know how to benefit from them.

The Mediterranean Diet (MD) has long been associated with good health and enhanced longevity. This primarily plant based diet consists of fruits and vegetables, legumes, whole grains, olive oil,

nuts, and limited intake of red meat and poultry. All other factors being equal, people who regularly consume the Mediterranean diet tend to be less susceptible to the ravages of important diseases such as cardiovascular disease, cancer, and neurodegenerative disease.

The key health promoting benefits of the MD result primarily from a high intake of olive phenylethanoid compounds, particularly oleuropein, hydroxytyrosol, and tyrosol. Olive phenolics are often referred to as polyphenols, even though technically speaking polyphenols contain more aromatic rings and hydroxyl groups than olive phenolics do. The most potent of the olive phenolics is hydroxytyrosol (HT) and its derivatives – in fact, 50% of the phenolics contained in olives and virgin olive oil are hydroxytyrosol and its derivatives. HT is found in the olive leaf and in olive oil.

Hydroxytyrosol is a powerful antioxidant to scavenge free radicals and a potent anti-inflammatory compound. The effect of phenolics and polyphenols on human health has been extensively published in the literature, affecting: cancer cell growth; cardiovascular disease; LDL cholesterol oxidation; blood pressure; diabetes; arthritis; neuroprotection; and anti-thrombosis. Olives contain up to 1000 mg/kg of HT; extra virgin olive oil up to 20 mg/kg of HT; refined olive oil only 2 mg/kg of HT. Given the strong clinical evidence that more HT is better for health, measures to maximize delivery and bioavailability of HT should be undertaken.

There has been an increasing interest to harness the added value of olive oil by-products (OOBP), mainly because they contain up to 25 times more valuable phenolics than virgin olive oil. This is logical given that phenolics are naturally water-soluble. They are therefore found in olive oil in relatively small concentrations. Despite this fact, virgin olive oil has been published in numerous peer-reviewed journals for its positive contributions to human health.

It is therefore of interest to recover these olive phenolics, with particular interest in hydroxytyrosol, for reintroduction into the food chain, simultaneously avoiding the need to deal with the expense of discarding the olive mill wastewater. Newer methods to extract phenolics from wastewater are being developed, with emphasis on non-solvent methods.

Clinical research has shown that aqueous hydroxytyrosol phenolic mixtures exert a potent effect on cancer prevention. A recent study has shown in particular that hydroxytyrosol in combination with lesser amounts of other phenolics produces a concentration-specific anti-angiogenic effect both *in vitro* and *in vivo*. These results are highly promising for future treatment and prevention not only of cancer, but all diseases in which neo-angiogenesis plays a role.

It is highly likely that controlled clinical trials with hydroxytyrosol supplements will be soon forthcoming. Hydroxytyrosol is well absorbed when ingested, resulting in a high degree of bioavailability. It is considered to have the highest antioxidant potency relative to all other olive phenolics. While the relationship between free radicals, antioxidant therapy, and health have been called into question recently, there are no demonstrable side effects or toxicity from hydroxytyrosol.

The value of hydroxytyrosol in relation to angiogenesis and cancer, cardiovascular protection, LDL cholesterol oxidation, neurodegenerative disease incidence and progression, blood pressure, diabetes and fasting blood sugar, arthritis, weight control, and regenerative medicine will all be discussed.

CURRICULUM VITAE DR. MICHAEL MC NAMARA

Dr. Michael McNamara leads a unique specialty of preventive health practice using the most sophisticated modalities of diagnostic imaging and blood analysis. A pioneer in the specialty of Magnetic Resonance Imaging (MRI), he founded the first hospital-based MRI department in Europe in 1986 at the Princess Grace Hospital in Monaco. He has led groundbreaking work in diagnostic MRI and CT imaging for cardiac disease and cancer, for pharmaceutical development and clinical testing, for sports related injuries, as well as in IT solutions for mining raw medical data for improvement of healthcare management.

Dr. McNamara received his M.D. at the University of Michigan in Ann Arbor, Michigan, and trained in Medicine and General Surgery at Mercy Hospital and Medical Center in San Diego, California, followed by specialty residency training in diagnostic radiology at University of California San Francisco (UCSF). He also completed fellowships in cardiovascular disease imaging and pharmaceutical MRI development, and in the development of pharmaceutical MRI contrast media for early cancer diagnosis.

In 1986, Dr. McNamara was recruited to be MRI department chairman at the Princess Grace Hospital, McNamara developed the world's first preventive Total Body Scanning program, for the early detection of cardiovascular and autoimmune diseases, cancer, and degenerative abnormalities, as well as implementation of regenerative medical treatment programs. Prince Rainier III bestowed Monaco citizenship to Dr. McNamara in 2001, in recognition of his significant achievements and contributions to the Principality of Monaco.

The US Olympic Committee appointed Dr. McNamara as consultant physician for the United States Men's Basketball "Dream Team" for the 1992 Barcelona Olympic Games. Dr. McNamara has lectured throughout the world and has published over 45 scientific papers and books. Dr. McNamara is currently the medical director of BIOPTRON A.G. and Zepter International, overseeing research and development for the clinical use of medical light therapy. He has also served on the Medical Advisory Boards of General Electric Medical Systems, Bristol-Meyers Squibb, Nycomed Laboratories, and Bracco Diagnostics, and sits on the Board of Directors of Akloma Biosciences in Stockholm, Sweden. Dr. McNamara also co-founded MDdatacor, an innovative health care information technology company.

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