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Rosemary Polyphenols as a natural alternative to synthetic preservatives: Implications for cancer chemoprevention

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Abstract

The Mediterranean diet has long been attributed with a variety of health promoting properties for cardiovascular disease, diabetes, and even cancer. One aspect that has not received enough attention is the benefits of Mediterranean herbs. Specifically, rosemary and its polyphenolic diterpenes (carnosic acid and carnosol) are known to possess anti-oxidant activity that is beneficial as a food preservative. In fact, the European Union has even adopted the use of standardized rosemary extracts as food preservatives into its legislation. Another potential benefit of these diterpenes is that they may be beneficial in cancer control. Herein, we describe the *in vitro* and *in vivo* studies carried out towards understanding the molecular mechanisms of carnosic acid and carnosol leading to inhibition of prostate cancer. The reported findings suggest that these polyphenols target multiple signaling pathways involved in cell cycle modulation and apoptosis. Using a xenograft tumor model we have observed individual phytochemicals to suppress tumor growth compared to mice receiving placebo. These results are especially significant as it is becoming more likely that individuals will be consuming standardized rosemary extracts that are a part of a natural preservative system in various food preparations. Taken a step further, it is possible that the potential benefits that are often associated with a "Mediterranean Diet" in the future may begin to extend beyond those consuming a traditional Mediterranean diet.

Biography

Jeremy J. Johnson completed his Doctor of Pharmacy and Ph.D. from the University of Wisconsin School of Pharmacy and School of Veterinary Medicine, respectively. He is an assistant professor at University of Illinois at Chicago College of Pharmacy and is the core leader for pre-clinical development in the UIC CENTRE, a program devoted to the translation and development of new chemical entities. He has an active research program evaluating various polyphenols for dietary cancer chemoprevention with more than 35 papers and abstracts, serves as an editorial board member, and as a scientific reviewer for the Department of Defense Medical Research Program.