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Nutraceuticals for health and exercise: Is there an optimal combination?

Nutraceuticals are compounds within foods that have beneficial effects on human health, in particular, disease prevention and treatment. Many of these compounds are extracted from foods that are considered “functional” such as fruits and vegetables consumed to prevent certain cardiovascular diseases or forms of cancer. Preparations of such nutraceutical, containing the active ingredients found in functional foods, involve extracting, purifying, concentrating and assaying. The Mediterranean diet (MD) is considered one of the healthiest diets for human longevity and disease prevention. More evidence still emerges about the MD adherence association with living beyond a century in some parts of the Mediterranean. The healthy food MD components (MDC) contain numerous nutraceuticals within its macro- and micronutrients. Components such as olive oil, tree nuts, seasonal fruits and vegetables, legumes and fish contain polyphenols, terpenoids, flavonoids, alkaloids, sterols, pigments and unsaturated fatty acids. Those provide a number of anti-oxidant, anti-inflammatory, insulin resistance and sensitivity and anti-cholesterol properties. Despite the recent interest on the MDC and their derived nutraceuticals, the physical activity and exercise part of a Mediterranean lifestyle (part of the MD pyramid) remains under-investigated. Exercise is an established primary and secondary prevention of cardiovascular disease, and regular exercise is associated with lower risk of mortality. Regular aerobic exercise training also promotes anti-oxidant defense system. Combining regular exercise with regular MD intake is likely to trigger or augment additional functions such as reduced lipid peroxidation and anti-inflammatory functions, which reflect a better vascular function in sedentary older populations. MD plant foods (fruits, vegetables, nuts, seeds, wine, olive oil), especially fresh green leafy vegetables are rich in polyphenols, terpenoids, flavonoids, alkaloids, sterols, pigments and unsaturated fatty acids, play an important role in maintaining wellness, and contribute to preventing cancer, depression, colorectal cancer, diabetes, obesity, asthma, and cognitive decline. Whether the disease-preventative functions of one or more MD component could be further triggered acutely or chronically with exercise training is unknown. Single component supplements such as fish oil (omega-3 fatty acids), vitamin C, tyrosol (within olive oil) have been shown to enhance exercise related outcomes through chronic effects on aspects of neuromuscular function, immunological function and oxidative stress resistance, thermotolerance and metabolic weight loss outcomes. Exercise and consuming MDC may have reciprocal functions in terms of promoting health outcomes. However, it is still unclear whether and how the benefits of supplements containing several MDC ingredients can be augmented through exercise training.

Biography

Alkhatib is a Registered Nutritionist, Fellow of Royal Society of Medicine, UK. As a distinguished exercise physiologist, he has over twenty years of higher education leadership experience, most recently as the Head of Division for Sport and Exercise Science at Abertay University, UK. He was awarded his PhD in Exercise Physiology and Metabolism, and MSc in Exercise Sciences (Health and Fitness) from the University of Essex, UK. Dr Alkhatib's research currently focuses on novel nutritional and exercise strategies to enhance health and sports performance outcomes, especially those related to metabolic health, weight loss and disease prevention. He has over 100 publications and won several research and academic excellence awards.

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