

Phytochemicals, Phytosterols & Dietary fibers

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Phenolic compounds

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graph TD; A[Phenolic compounds] --> B[Human beings consumes 3.5 kg of oxygen each day  
Not completely reduced  
Formation of free radicals  
Reactive oxygen species (ROS) such as superoxide, hydroxyl radical, peroxy radical, and alkoxy radical, as well as hydrogen and other peroxides.]; B --> C[Prevent oxidative stress]
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- Formation of free radicals
- Reactive oxygen species (ROS) such as superoxide, hydroxyl radical, peroxy radical, and alkoxy radical, as well as hydrogen and other peroxides.

Prevent oxidative stress

Pytochemicals



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graph TD; A[Pytochemicals] --> B[Antioxidant effect<br/>Effect on cell differentiation<br/>Increased activity of enzymes that detoxify<br/>Effect on DNA methylation<br/>Maintenance of DNA repair<br/>Increase in apoptosis of cancer cells<br/>Decrease in cell proliferation]; B --> C[Anticarcinogenic effects]
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- Antioxidant effect
- Effect on cell differentiation
- Increased activity of enzymes that detoxify
- Effect on DNA methylation
- Maintenance of DNA repair
- Increase in apoptosis of cancer cells
- Decrease in cell proliferation

Anticarcinogenic effects

Phytosterols

- Phytosterols: are the plant equivalent of cholesterol in animals.
- The most common bioactive phytosterols are beta-sitosterol, campesterol, and stigmasterol
- The saturated derivatives of plant sterols are plant stanols such as sitostanol.

Dietary fibers

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graph TD; A[Dietary fibers] --> B[➤ Long fibrous structure of dietary fibers allow to entrap harmful toxins & carcinogens in the digestive tract]; B --> C[Anticarcinogenic effects];
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- Long fibrous structure of dietary fibers allow to entrap harmful toxins & carcinogens in the digestive tract

Anticarcinogenic effects

LDL cholesterol oxidation

Polyphenols

➤ Positive effect on prevention of low density lipoprotein (LDL) cholesterol oxidation which may be exerted by a free radical scavenging mechanism Oxidation of cholesterol cause formation of plaque in the arteries →

Prevention of LDL oxidation

Case Study

Fish Oils & Rheumatoid Arthritis

- Over 15 clinical trials and 2 meta-analyses favor the use of fish oil in patients with Rheumatoid Arthritis (RA)
- A double-blind placebo controlled trial showed that fish oil supplementation of 130 mg/kg of body weight each day decreased the following in the control group:
 - Number of stiff joint
 - Duration of morning stiffness
 - Pain

Robert, 2005, JABFP. 2005; 18: 28-36.



Case Study

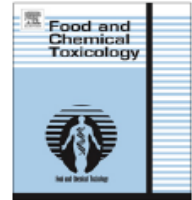
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Effect of a special carbohydrate–protein bar and tomato juice supplementation on oxidative stress markers and vascular endothelial dynamics in ultra-marathon runners



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Abstract

The present study examined the effect of consuming a special bar containing whey protein and carbohydrates in a specific ratio (1: 1) in ultra marathon runners for a two month period. The bar consisted of either whey (N = 16), or a commercially available tomato juice (N = 15).

To conclude, the administration of these two products in ultra marathon runners for a two month period, improved their oxidation state, while the tomato juice improved their vascular endothelial function too.