BP X

FUNCTIONAL NUTRIENTS®

Clinical Applications

- Supports Cardiovascular Health*
- Provides Antioxidant Support*
- Promotes the Maintenance of Healthy Blood Pressure Levels That Are Already Within the Healthy Range*

BP X *combines three safe, standardized, food-derived extracts that have been shown to support antioxidant activity or nitric oxide synthesis or both. These mechanisms contribute to arterial health and the maintenance of blood pressure that is already within a healthy range.**

All Personalized Medical Solutions Formulas Meet or Exceed cGMP Quality Standards

Discussion

Adequate functioning of the endothelium is critical to allow blood vessels to fully dilate in response to changes in blood flow and to deter constriction of vessels. Diminished nitric oxide (NO) availability and an imbalance of endothelium-derived relaxing and contracting factors contribute to endothelial dysfunction, which is linked to the development of numerous vascular conditions.[1] Each of the food-derived extracts in BP X have exhibited improvements in clinical markers of vascular health.*

Cordiart™
It has been suggested that hesperidin alters endothelial cells to permit natural dilation and control of blood flow and pressure. In isolated and cultured endothelial cells, hesperidin stimulates the production of endothelial NO synthase, the NO-producing enzyme that triggers arterial dilation which, in turn, increases healthy blood flow.[2,3] A randomized, placebo-controlled, double-blind, crossover trial examined whether oral hesperidin administration (500 mg/day for three weeks) improved endothelial function in 24 individuals with metabolic syndrome. The results revealed a significant increase in flow-mediated dilation (FMD) in the metabolic syndrome patients compared to the patients on placebo.*[4]

Another name for hesperidin is hesperetin 7-rutinoside. As discussed above, the rutinoside hesperidin is widely studied and has been linked to several major health-promoting effects. However, the low solubility and complex metabolism of rutinosides in the gastrointestinal system have limited their absorption. Each capsule of BP X contains 250 mg of Cordiart, a unique pharmaceutical grade rutinoside orange peel extract that contains a high concentration of rutinoside-2S. The high ratio of the more active “S” form in Cordiart makes it unique. Compared to other rutinoside preparations, which contain nearly equal amounts of the “S” to “R” forms, Cordiart has shown greatly improved bioavailability.*[5,6]

Cordiart has been studied for its effect in activating endothelial production of NO. In a randomized placebo-controlled trial, subjects received a three-week intervention of 500 mg/day of Cordiart resulting in an 18% higher FMD score, a direct marker of endothelial function, compared to those receiving placebo. Additionally, concentrations of high-sensitivity C-reactive protein (hs-CRP) and serum amyloid A (SAA) were reduced as was circulating E-selectin, indicating reduced obstruction of the endothelium.*[4]

An additional randomized, double-blind, placebo-controlled study evaluated the effect of 450 mg of daily Cordiart on endothelial function in 68 overweight subjects for a six-week period. Although no significant changes in fasting or postprandial FMD were observed in a group of patients with a baseline FMD of less than 3%, those with a baseline greater than or equal to 3% showed significant improvement in endothelial function. Circulating adhesion molecules sVCAM-1 and slCAM-1 were reduced along with systolic and diastolic blood pressure in both groups regardless of baseline FMD. The findings suggested that Cordiart has a promising role in the preservation of endothelial function and healthy blood flow in overweight individuals.*[7]

Grape Seed Extract
Grape seed extract is a rich source of oligomeric proanthocyanidins (OPCs), which donate electrons or protons to reactive oxygen species (ROS) and act as scavengers.[8] Oxidative stress can increase vascular endothelial permeability, formation of oxidized LDL, and activation of phagocytic cells. Grape seed extract has been investigated for its ability to interfere with oxidative stress, benefiting cholesterol and blood pressure.*[9,10]

When utilized as a dietary supplement, grape seed extract has been suggested for lowering blood pressure in individuals with mildly elevated levels. In a double-blind placebo-controlled study, supplementing with 300 mg per day of grape seed extract for eight weeks (n=66) resulted in a statistically significant decrease in both systolic (average reduction of 8 mmHg) and diastolic blood pressure (average reduction of 5mmHg) in adults with prehypertension (mildly elevated blood pressure). Levels in the placebo group were not reduced.*[11]

In another double-blind placebo-controlled study, 27 subjects with metabolic syndrome were given 150 or 300 mg per day of grape seed extract for four weeks. Both systolic and diastolic blood pressures were lowered after treatment with grape seed extract as compared with placebo. A decrease in oxidation of LDL particles also occurred in the treatment group.*[12]

Each capsule of BP X contains 75 mg of Enovita®, a grape seed extract standardized to 95% proanthocyanidins. Enovita has shown efficacy in maintaining healthy blood pressure when associated with diet and lifestyle modification. A four-month duration study evaluated two dosages (150 mg/day and 300 mg/day) of Enovita in 119 subjects with borderline hypertension (defined as pre-hypertension) (120-139 mmHg/80-89 mmHg)

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Supplement Facts

Serving Size: 1 Capsule
Servings Per Container: 60

	Amount Per Serving	%Daily Value
Cordiart™ Rutinoside (from *Citrus sinensis*)(fruit)	250 mg	**
Arthricor® Olive Extract Blend (*Olea europaea*)(fruit) (9% hydroxytyrosol, 4% oleuropein, 1% tyrosol)	125 mg	**
Enovita® Grape Extract (*Vitis vinifera*)(seed) (95% proanthocyanidins)	75 mg	**

**Daily Value not established.

Other Ingredients: HPMC, dicalcium phosphate, maltodextrin, ascorbyl palmitate, and silica.

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Enovita® is a registered trademark of Indena S.p.A.

Cordiart is a trademark of BioActor B.V.

and stage 1 hypertension (140-159 mmHg/90-99 mmHg).[13] The participants utilized nondrug dietary (reduction in salt, alcohol, and caffeinated drinks) and lifestyle (regular exercise, sleep time improvement, relaxation, and smoking reduction) interventions. Blood pressure and heart rate were the primary endpoints, with blood pressure normalization being significantly higher in the Enovita supplementation groups compared to control starting from the fourth week of supplementation.*[14]

Olive Extract

The evidence linking the Mediterranean diet to cardiovascular health has grown substantially in recent years[15-17] with specific research suggesting that olive oil and its phenolic constituents are primary beneficial contributors.[18-22] Phenolic compounds have been shown to have a protective effect against LDL oxidation,[20,23,24] and additional studies have demonstrated the ability of olive *leaf* extracts to significantly reduce blood pressure measurements.[25] Olive polyphenolic compounds have also been linked to an increase in the production of NO.*[26,27]

Each capsule of BP X provides 125 mg of Arthricor® olive extract blend with three polyphenols—hydroxytyrosol, oleuropein, and tyrosol at levels supportive of vascular health.*

Directions

Take one capsule twice daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

Does Not Contain

Wheat, gluten, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

References

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