

Joint, Tendon, Ligament II Stem Cell Support†

DESCRIPTION

Joint, Tendon, Ligament II is a unique formula designed to support healthy stem cell function that can contribute to healthy joints and tissues.† Specific nutrients, such as Vitamin C and Pterostilbene have been shown to support normal mesenchymal cell growth, migration and proliferation. † The combination of L-carnosine, vitamin D3, green tea, and blueberry have been studied for their ability to influence stem cell activity.†

Dr. Martin Gallagher, M.D., D.C. has developed the **Joint, Tendon, Ligament** formulas to use for musculo-skeletal support and in conjunction with regenerative therapies, such as prolotherapy, PRP, acupuncture, and manipulation. **Joint, Tendon, Ligament I and II** can be taken together for optimal results.

FUNCTIONS

Maintaining optimal tissue and joint health is dependent in part upon the activation of healthy, endogenous stem cells, particularly mesenchymal cells. Mesenchymal stem cells (MSCs) differentiate into multiple cell types and have demonstrated the ability to migrate through the peripheral circulation to the site where they may be most needed. Stem cells are found in many organs, including bone marrow, peripheral blood, umbilical cord, spleen and brain. Research is evolving to discover how to optimize endogenous stem cell production and health in adults to promote self-healing.

Specific nutrients may help contribute to stem cell stimulation and migration to support tissue, tendon, and ligament health. Pterostilbene, a methylated resveratrol, supports healthy apoptosis, which has been suggested to be an important factor in influencing targeted migration of stem cells from blood to tissues.† Pterostilbene can also support tissue health by down regulating iNOS and COX-2 gene expression.†

pTeroPure™ pterostilbene is a nature identical form of trans-pterostilbene, a stilbene found in certain berries and considered a methylated form of resveratrol. Pterostilbene has greater lipophilicity, a longer half-life and a higher potential for cellular uptake than resveratrol.

Researchers have reported that vitamin D3, L-carnosine, blueberry and green tea produce a synergistic effect to promote proliferation of human stem cells, also called hematopoietic progenitors.† In vitro studies demonstrate that vitamin D3 has a dramatic effect on stimulating the proliferation of progenitor cells.

Blueberries, known for their significant antioxidant activity have demonstrated the ability to modulate cell signaling activity, while green tea active compounds may promote normal cellular growth.†

Folate, supplied as the bioavailable methylfolate, and vitamin B-12 as methylcobalamin play important roles in erythropoiesis (red blood cell formation), and low levels of these nutrients can result in less than optimal cellular health. Metafolin® is a patented, natural form of (6S) 5-methyltetrahydrofolate (5-MTHF) and is the naturally occurring, predominant form of folate commonly found in cells.

Vitamin C (ascorbic acid) has been shown to positively modulate mesenchymal stem cell proliferation and motility via hepatocyte growth factor (HGF). Hepatocyte growth factor is secreted by mesenchymal cells and acts as a multi-functional cytokine on cells of epithelial origin. Additionally, recent *in vitro* research has shown that vitamin C was able to induce telomerase activity in periodontal ligament stem cells and enhance the expression of type I collagen, fibronectin, and other markers of tissue health.

Vitamin K together with vitamin D has been shown to increase osteoblast markers in human MSCs isolated from fracture sites. These nutrients may therefore play an important role in support of bone and tissue health.†

INDICATIONS

Joint, Tendon, Ligament II is indicated for individuals that desire additional support of healthy tissues.

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FORMULA (#201690-90X)

Serving Size 3 Vegetarian capsules

Vitamin C (as Ascorbic Acid)	1,000 mg
Vitamin D-3.....	1,000 IU
Vitamin K-2 (as menaquinone-7).....	45 mcg
Folate (as L-methylfolate, Metafolin®).....	400 mcg
Vitamin B-12 (methylcobalamin).....	500 mcg
L-Carnosine.....	250 mg
Green Tea leaf Extract.....	250 mg
(<i>Camellia sinensis</i>)(standardized to 98% polyphenols, 80% catechins, 45% EGCG, decaffeinated)	
Wild Blueberry fruit Extract	250 mg
(<i>Vaccinium angustifolium</i>) (standardized to 4% polyphenols)	
Pterostilbene.....	50 mg
(methylated resveratrol, pTeroPure™)	
Other Ingredients: Hydroxypropyl methylcellulose (capsule), cellulose, silica, and vegetable stearate.	

SUGGESTED USE

Adults take 3 capsules daily with a meal or as directed by your health care professional.

SIDE EFFECTS

No adverse effects have been reported.

WARNING: This product contains Vitamin K, which interferes with the prescription drug Coumadin (Warfarin). If taking this drug, consult your physician prior to use.

STORAGE

Store in a cool, dry place, away from direct light. Keep out of reach of children.

REFERENCES

A.I. Tyukavin, et al. Mechanism of Targeted Migration of Mesenchymal Stem Cells. *Cell Technologies in Biology and Med.* 2012 Aug 2: 577.

Bickford PC, et al. Nutraceuticals synergistically promote proliferation of human stem cells. *Stem Cells Dev.* 2006 Feb;15(1):118-23.

Nakamura T (1992). "Structure and function of hepatocyte growth factor". *Prog. Growth Factor Res.* **3** (1): 67–85.

Koury MJ, Ponka P. New insights into erythropoiesis: the roles of folate, vitamin B12, and iron. *Annu Rev Nutr.* 2004;24:105-31. Review.

Williams RJ, Spencer JP, Rice-Evans C. Flavonoids: antioxidants or signalling molecules? *Free Radic Biol Med.* 2004 Apr 1;36(7):838-49. Review.

Chen ZP, Schell JB, Ho CT, Chen KY. Green tea epigallocatechin gallate shows a pronounced growth inhibitory effect on cancerous cells but not on their normal counterparts. *Cancer Lett.* 1998 Jul 17;129(2):173-9.

Pan MH, Chang YH, Tsai ML, Lai CS, Ho SY, Badmaev V, Ho CT. Pterostilbene suppressed lipopolysaccharide induced up expression of iNOS and COX2 in murine macrophages *J. Agric. Food Chem.*

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56, 7502 (2008)

Roberti M, Pizzirani D, Simoni D, Rondanin R, Baruchello R, Bonora C, Buscemi F, Grimaudo S, Tolomeo M
Synthesis and biological evaluation of resveratrol and analogues as apoptosis inducing agents. J. Med. Chem.
46, 3546 (2003)

Wei F, et al. Vitamin C treatment promotes mesenchymal stem cell sheet formation and tissue regeneration by
elevating telomerase activity J Cell Physiol. 2012 Sep;227(9):3216-24.

Gigante A, et al. Vitamin K and D association stimulates in vitro osteoblast differentiation of fracture site
derived human mesenchymal stem cells. J Biol Regul Homeost Agents. 2008 Jan-Mar;22(1):35-44.

Lim JK, Hui J, Li L, Thambyah A, Goh J, Lee EH. Enhancement of tendon graft osteointegration using
mesenchymal stem cells in a rabbit model of anterior cruciate ligament reconstruction. Arthroscopy.
2004;20:899-910

For more information on Joint, Tendon, Ligament II visit douglaslabs.com

† These statements have not been evaluated by the Food and Drug Administration.
This product is not intended to diagnose, treat, cure, or prevent any disease.

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Your patients trust you.**