

ageLOC® Vitality TECHNICAL OVERVIEW

PRODUCT OVERVIEW

What is ageLOC® Vitality?

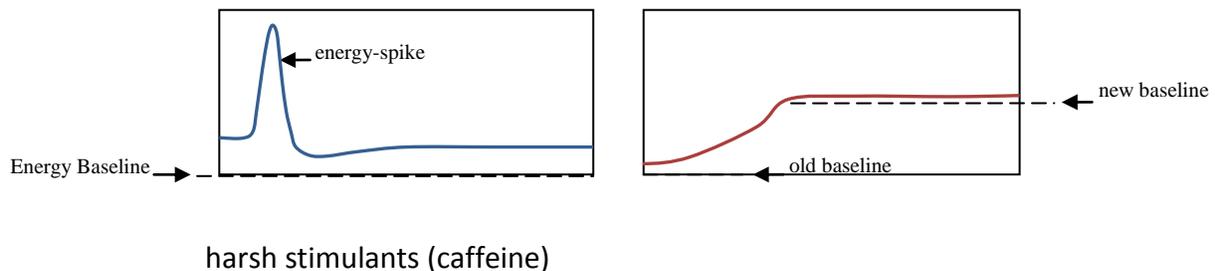
ageLOC® Vitality is a dietary supplement formulated to address the sources of vitality. By supporting a mitochondria-related Youth Gene Clusters (YGCs) expression profile, an optimal activity of mitochondria is targeted resulting in a proper vitality level. This exclusive ageLOC® Vitality blend improves three key areas of vitality – physical vigour, mental acuity and sexual drive.

What are the benefits of ageLOC® Vitality?

When ageLOC® Vitality is taken regularly, noticeable benefits should include improvement in stamina and physical capacity, improved mental acuity or sharpness and increased levels of sexual drive.

What makes ageLOC® Vitality unique?

Loss of *vitality* is one of the signs of ageing that people notice. First, ageLOC® Vitality is the only product specifically designed to target the sources of vitality and promote YGC activity. Second, unlike other one- or two-dimensional products, ageLOC® Vitality supports vitality in three important ways: physical vigour, mental acuity and sexual drive. Next, ageLOC® Vitality contains an optimal blend of ingredients that optimises brain, muscle and heart function differently. Lastly, ageLOC® Vitality targets a higher baseline energy level with consistent use, helping you to avoid the highs and lows of harsh stimulants and excessive sugar. (See illustration below)



Who should take ageLOC® Vitality?

ageLOC® Vitality is intended for men and women both young and old, who feel to be ready to fully engage in a active vital life and who want to activate their vitality. It is not recommended for children.

Are there individuals who should avoid taking ageLOC® Vitality?

ageLOC® Vitality contains a blend of safe and well studied ingredients and is suitable for all healthy adults. Individuals who have a medical condition, are pregnant or lactating, or taking prescription medication, must consult a physician prior to use. ageLOC® Vitality may contain traces of soy and peanuts, therefore it is not suitable for individuals with allergies to soy or peanuts.

What is the recommended adult use?

Take three (3) capsules twice daily. Can be taken with or without food. As an alternative, take six (6) capsules once daily. Do not exceed six (6) capsules per day.

Will I notice the benefits of ageLOC® Vitality right away?

ageLOC® Vitality is not a stimulant and is designed to raise overall levels of vitality with consistent use. When people take ageLOC® Vitality as directed, they should notice the full complement of benefits within two to four weeks.

What YGC is associated with vitality?

Pharmanex® scientists worked to identify age-related gene expression changes in tissues associated with physical and mental vitality – related to muscle and brain function. After months of collaboration with LifeGen Technologies, a mitochondrial YGC was identified, comprised of 52 genes whose expression changes with age and their expression profiles are targeted by ageLOC® Vitality.

What ingredients does ageLOC® Vitality contain?

ageLOC® Vitality contains a blend of three unique extracts: 1) *Cordyceps sinensis* Cs-4 Mushroom Mycelia; 2) Pharmanex® Asian Ginseng (*Panax ginseng*) Root Extract – a proprietary ginseng extract with a balance of biological activity not found in other ginseng extracts; and 3) a unique, patented pomegranate extract (*Punica granatum*).

OTHER QUESTIONS RELATED TO ageLOC® Vitality

How is vitality different from energy?

At different points in life, all individuals fall on a spectrum that ranges from *vitality* at one end, to *senescence* at the other. Senescence is defined as the decline of vitality and entails all changes in an individual that adversely affect his/her vitality – including physical vigour, mental acuity and sexual drive. Vitality is much more than physical energy; it encompasses all aspects of optimal physical and mental functioning, including a positive outlook and enjoyment of life.

Is ageLOC® Vitality based on Caloric Restriction research?

Our partnership with LifeGen Technologies grants us access to their advanced understanding of ageing gene expression – including a vast gene data bank. LifeGen is perhaps most widely recognised for their longitudinal 20 year study investigating the anti-ageing effects of caloric restriction (CR) – comparing gene expression of CR subjects to gene expression of non-CR subjects. Pharmanex® and LifeGen scientists are actively investigating CR data for the development of future ageLOC® Vitality advancements; however, ageLOC® Vitality was developed through an assessment of gene expression differences of young compared to aged subjects, not caloric restriction.

What is gene “expression”?

Any *one* cell in your body contains the genetic information (DNA) sufficient to make all other cell types in your body. Yet each cell expresses only the genes necessary to that cell’s function; therefore, different genes are expressed at different levels depending on whether it is a liver, skeletal muscle, brain or other cell type. To *express a gene* means the information of that gene is used to produce a specific molecule (either functional, structural or defensive proteins). Just as genes are expressed differently from cell-type to cell-type, their expression also changes over time. Genes that were expressed at low rates during youth might increase in their expression as we age, while others decrease their rate of expression. It is important to understand that as we age, gene expression does not categorically *increase* or categorically *decrease*; each gene responds to a different degree – some up, some down and each at different levels. LifeGen Technologies’ ageing gene tissue database allows Pharmanex® scientists to compare gene expression patterns associated with the mitochondrial function related to the three dimensions of vitality. That way, when we test an ingredient, we can compare the gene expression to the database and determine whether the resulting gene expression profile is targeting a mitochondrial function associated with improved vitality. This allows us to screen ingredients to determine their ability to activate gene expression in those tissues to an optimal expression level. It is our ability to use the tissue data bank as our reference that is one of the strengths of ageLOC® technology.

Will ageLOC® Vitality raise my Skin Carotenoid Score?

Ageing is a multi-factorial process that occurs when tissue damage exceeds tissue repair. The Pharmanex® BioPhotonic Scanner provides a measurement of an individual's specific antioxidant status; and a healthy antioxidant status helps to protect tissue. This includes both protection of the mitochondria, related to ATP production, and protection of DNA, which related to DNA integrity and gene expression patterns. Separately, ageLOC® Vitality targets expression of YGCs associated with vitality. Both gene expression and antioxidant protection are important components of anti-ageing. ageLOC® Vitality can be taken with LifePak® or LifePak® Essentials Super A for optimal nutrition and antioxidants (as vitamins C and E). Together, ageLOC® Vitality and LifePak®/LifePak® Essentials Super A supports gene expression associated with vitality and provide ultimate antioxidant protection, helping to optimise your vitality.

Will ageLOC® Vitality help me to look younger?

Two common complaints of ageing are *looking* and *feeling* older. While ageLOC® Transformation skin care system targets youthful skin, ageLOC® Vitality promotes healthy YGC activity associated with vitality.

What is LifeGen Technologies?

LifeGen was co-founded in November 2000 by Dr. Richard Weindruch and Dr. Tomas A. Prolla, professors at the University of Wisconsin-Madison and leaders in the fields of gerontology and genetics. The mission of LifeGen Technologies is to discover the genetic basis of the ageing process. LifeGen's pioneering research has resulted in several pending patents, and their on-going research is expected to yield additional, important intellectual property. Additionally, LifeGen has a patent application for the use of such "gene expression profiling" as a method to measure the progression of the ageing process at the molecular level in individual organs and tissues. LifeGen is a research Institute backed by over 30 years of clinical research (in methods for extending life) whose founders have published more than 230 scientific papers.

We believe the collaboration with LifeGen gives Nu Skin® and its Distributors a distinct advantage with an exclusive and scientifically substantiated method of identifying YGC and the ability to develop proprietary product formulas incorporating ageLOC® science. LifeGen is currently collaborating with Pharmanex® R&D scientists on the product development and scientific validation of upcoming ageLOC® nutritional products.

BACKGROUND – AGE RELATED VITALITY LOSS

What is age-related vitality loss?

By the time most adults reach their mid to late thirties, they report a decline in *vitality*, reporting it even before the appearance of first wrinkles. Although decline of *energy* is typically the first reported sign, *age-related vitality loss* is much more than loss of energy alone. Vitality is described in scientific literature as a state of youthfulness which affects all cell types and body tissues. Because each cell- or tissue-type has its own unique function, vitality decline is manifest in different ways in different tissues. For example, muscle-cells are responsible for movement, while neurons are responsible for mental and emotional functions. Vitality decline of muscle cells is marked by loss of physical vigour, whereas vitality decline of brain cells is manifest as the attenuation of mental acuity and sexual drive.

How are mitochondria involved in vitality?

Mitochondria (*singular*: mitochondrion) are small sub-cellular structures (organelles) responsible for the conversion of energy from the food calories we consume into a form of chemical energy that our cells can utilise ATP (adenosine triphosphate) – which drives the vitality of cells. The number of mitochondria per cell ranges from fewer than 100 to several thousand, depending on the type and function of the cell (Pike 1984). The vitality of each individual cell is dependent on the *production* of ATP. As we age, the mitochondrial number per cell, size and efficiency all decrease – contributing to vitality decline. It is *in* the mitochondria of each cell that the oxygen we breath and the food we eat are converted into ‘cellular energy’ (ATP). ATP serves as a source of energy for most physiological and metabolic reactions in the body; as such, all life depends on ATP. This basic understanding of mitochondria and ATP has led researchers to investigate changes in mitochondrial function; tissue and cell-types directly related to physical, mental and sexual vitality have been of particular interest.

As the mitochondria of a cell decline in their efficiency to produce ATP, vitality loss of that cell is manifested in different ways. For example, muscle cells are responsible for movement and influence metabolism of glucose and lipids, while neurons are responsible for mental and emotional functions. Vitality decline of muscle cells is marked by loss of physical vigour, whereas vitality decline of brain cells is manifest as the attenuation of mental acuity and sexual drive. Case studies and preclinical research confirm that ageLOC® Vitality targets the optimal activity of YGCs expression profiles associated to mitochondrial function and thus vitality.

SAFETY

Is ageLOC® Vitality safe?

ageLOC® Vitality is safe when used as directed; its ingredients have a long and safe history of use in humans. In addition to a safe history of use, Pharmanex® has conducted both pre-clinical and clinical studies to ensure safety.

Is targeting gene expression safe?

Gene expression modulation has been affecting the human race (and all organisms) since the beginning of time. Although our genetic makeup (DNA) remains unchanged throughout our life, the *rate* at which individual genes are *expressed* changes as we age. Other factors *also* affect gene expression throughout the course of our life – including the nutrients we consume and lifestyle factors such as exercise, stress and smoking can all positively or negatively impact gene expression.

Are there any contraindications or drug interactions?

If you are taking a prescription medication, you should consult your physician prior to taking any dietary supplement. Concurrent use of ageLOC® Vitality with prescription drugs has not been assessed; however, third party studies of the individual ingredients provide useful insights to physicians advising their patients. In particular, people taking anticoagulants (including high-dose aspirin therapy), anti-diabetic drugs, MAO inhibitors, blood pressure medication, immunosuppressants and prescription drugs metabolised by the CYP3A4 pathway should consult a physician before taking this or any other dietary supplements. Individuals taking any other drugs should also consult a physician prior to taking this or any other supplement. Pharmanex® does not assume liability for the physician's recommendations. Discontinue use of this product two weeks prior to and after surgery. A physician should be notified prior to surgery if supplementation was continued during the two-week washout period. ageLOC® Vitality is not intended for women who are pregnant or breastfeeding.

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