

Mitochondrial Specific Peptides in Anti-Aging and Therapeutic Rejuvenation: An Innovative Fusion of Mitochondrial Medicine and Cellular Therapy

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The main factor contributing to tissue aging and degeneration is cellular senescence, a phenomenon characterized by cessation of cell proliferation as a response to continuous exogenous and endogenous stress and damage.

Recently it has been shown that telomere shortening and DNA damage launches the cascade of signaling affecting the mitochondrial biogenesis, increasing the production of reactive oxygen species and promoting cell cycle arrest, hence is responsible for aging process. Latest research is focused on attempts of mitochondrial DNA replacement or depletion of mitochondria from the cell. However, our approach to anti-aging therapeutic strategy is based on restoring and modulating the mitochondrial activity by administering the preparation, containing the combination of organ-specific mitochondria exported peptides, which reduce the apoptosis rate and production of reactive oxygen species and enhance mitochondrial metabolism.

The study involved 17 volunteers in the age 58-72 years old with various pathology and age-related conditions. All of them received intramuscular injections of standardized rejuvenation-revitalization combination of mitochondrial specific peptides. Rejuvenation-revitalization protocol included administering of peptides twice weekly during 8 weeks. The levels of main reactive oxygen species were measured before and after treatment.

The following results were obtained: the mean plasma level of reduced glutathione increased from 2.9 ± 0.03 to 4.3 ± 0.04 and the ratio of oxidized to reduced glutathione

reduced; level of superoxide dismutase showed significant increment tendency in all patients; levels of Humanin peptide and Small Humanin-like peptides became significantly improved in all patients.

Application of organ-targeted mitochondria-derived proteins may improve three major mitochondrial functions: apoptosis, metabolism, and oxidative stress. Hence, this effective method of rejuvenation-revitalization may have positive application in internal, holistic and esthetic medicine.

线立体特定性胜肽之于抗衰老与治疗修复：线粒体医学与细胞疗法之革新性结合 马来西亚，迪米德·柯克医师

细胞老化是组织老化及组织退化的主要因素。细胞老化特徵为外源与内源性压力及毁损的持续发生。近期研究显示，端粒的缩短与 DNA 受损，引发级联信号，影响线粒体的生物发生，增加活性氧类产量及促使细胞周期停滞，并因此负责老化过程。最新研究专注于替换线粒体 DNA 的尝试或是细胞线粒体的耗损。然而，吾等则是依据修整及调节线粒体活性，施用含器官特定性线粒体导出性胜肽制剂，以降低凋亡率及活性氧类产量及促进线粒体代谢率。

研究共涉及 17 名, 年龄介于 58-72 岁之间的自愿人士，各有不同的病理及年龄相关性病情。所有受测者接受标准化线粒体特定性胜肽修复- 激活方案（肌肉注射）。方案为期 8 周，每周接受两次胜肽注射。治疗前后皆有测量主要活性氧类水平。

研究结果如下：血浆还原型谷胱甘肽水平，从 2.9 ± 0.03 增至 4.3 ± 0.04 ；氧化型谷胱甘肽与还原型谷胱甘肽水平比列下降；所有病人之超氧化物歧化酶水平显示有显著增加趋势；所有病人的人力肽 (Humanin peptide) 及小型人力样肽 (Humanin-like peptides) 水平皆显著改善。

器官靶向线粒体衍生蛋白质的应用或能改善三大线粒体功能：凋亡率，代谢率及氧化应激。此有效修复- 激活方案于内科，整体医学及医美医学上皆可能会有正面效益。