Standard Process®

Nutritional Support Protocol

Support for Healthy Cardiac Muscle Function

Developed and reviewed by the clinical, chiropractic, and naturopathic members of the Standard Process team

Myocardium Health and Function

The heart circulates blood throughout the body via coordinated, involuntary muscular contractions and electrical impulses. The myocardium is responsible for the heart's contractile function and the myocardium's primary cells are cardiomyocytes. Unlike other muscle cells, cardiomyocytes are almost completely aerobic and contain a large volume of mitochondria and myoglobin reserves that serve as an oxygen storage unit. The heart consumes 30 kg of ATP daily, nearly all of which is produced in cardiomyocyte mitochondria.

Cardiomyocyte death can occur because of ischemia and hypoxia associated with a myocardial infarction. Surviving cardiomyocytes undergo hypertrophy to compensate for loss of cells and fibrotic tissue replaces dead cells. These structural changes impair the heart's ability to contract effectively and can disrupt the heart's electrical conduction system. This can lead to heart failure, a progressive disease that involves a decline in contractile function and insufficient blood being pumped to meet the demands of the body. Conditions such as hypertension, diabetes, and coronary artery disease can exacerbate heart failure and contribute to its progression.

Nutrition and lifestyle modifications can support the health of cardiomyocytes and the broader cardiovascular system, modulate the impact of heart stressors and free radical activity, and promote metabolic health.

Supportive Lifestyle Practices

Regular physical exercise improves cardiovascular function through adaptations to the heart and vascular system.[1] Exercise augments mitochondrial biogenesis in cardiomyocytes and improves myocardial perfusion. It also enhances systemic oxygen delivery by promoting vasodilation and angiogenesis.

Encourage patients to address chronic stress through mindfulness, breathing techniques, visualization, exercise, outdoor activities, connecting with friends and family, and practicing gratitude. Mental stress has been shown to induce myocardial ischemia despite normal cardiac testing and in the absence of cardiac dysfunction.[2]

Emphasize the importance of sleep regularity and duration. Individuals with greater sleep timing irregularity have higher coronary artery calcium, arterial pressures and inflammatory markers like interleukin-6, and high-sensitivity CRP.[3]

Whole Foods Nutritional Recommendations

Encourage patients to consume magnesium-rich foods like nuts, seeds, legumes, whole grains, and vegetables. Magnesium plays a role in modulating neuronal excitation, intracardiac conduction, and myocardial contraction.[4] It is also a cofactor in enzymatic reactions involved in ATP synthesis, helps maintain the integrity of mitochondrial membranes, regulates calcium levels within mitochondria which helps modulate apoptosis, contributes to antioxidant defense, and supports cellular energy capacity.[5]

Promote consumption of whole foods rich in an array of B vitamins like fish, meat, eggs, nuts, vegetables, and legumes. B vitamins act as key cofactors, precursors, and building blocks that support ATP production and healthy mitochondrial and cellular function in the myocardium.[6,7]

Dietary Supplement Regimen

Cardio-Plus®

Suggested Use: **2 tablets per meal**

Cardio-Plus® is a supplement that helps support heart/cardiovascular health and is an excellent source of niacin and vitamin B_6.

- Supports the healthy functioning of the heart and other muscles*
- Supports healthy circulation*
- Provides ingredients with antioxidant activity*
- Contains bovine heart PMG™ extract
- Supports energy metabolism*
- Contains a combination of key ingredients from Cataplex® B2, Cataplex® E2, Cardiotrophin PMG®, and Cataplex® C

E-Z Mg™

Suggested Use: **6 tablets per day**

- Essential for central nervous system health*
- Helps to bridge the gap in dietary magnesium intake*
- Plant-based and consists of a blend of forms of naturally occurring magnesium

Cataplex® B-Core

Suggested Use: **: 2 tablets per day**

Cataplex® B-Core contains naturally-occurring phytonutrients and B vitamins including thiamin and folate derived from the whole food matrix.

- Contains ingredients that support healthy cellular processes*
- Formulated with ingredients that have naturally occurring B vitamins
- Long-term vitamin B support*

Hawthorn

Suggested Use: **1 tablet 2-3 times daily**

Hawthorn contains Hawthorn leaf and flower, which has been used traditionally to support a healthy cardiovascular system.* Hawthorn is traditionally used in herbal preparations to:

- Support the healthy functioning of the heart muscle*
- Help promote cardiovascular system health*
- Provide antioxidant activity*

Assessment of Peripheral Venous Health

In Office/Physical Exam

- Physical Exam: Vital signs and complete heart and lung exam
- Signs/Symptoms such as chest pain, palpitations, dyspnea, syncope, fatigue, peripheral edema
- Lab Studies: complete blood count (CBC), complete metabolic panel (CMP), high sensitivity C-reactive protein (hsCRP), lipid panel, homocysteine, lipoprotein(a), brain natriuretic peptide (BNP)
- Other Testing: Chest x-ray, electrocardiogram, echocardiogram, cardiac stress testing

REFERENCES

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3. Full, K. M., et al (2023). Journal of the American Heart Association, 12(4), e027361.
4. Tangvoraphonkchai, K., & Davenport, A. (2018). Adv in chronic kidney dis, 25(3), 251–260.
5. Killilea, D. W., & Killilea, A. N. (2022). Free radical biology & medicine, 182, 182–191.
6. Wesselink, E., et al. (2019). Clinical nutrition (Edinburgh, Scotland), 38(3), 982–995.
7. Piquereau, J., et al. (2021). International journal of molecular sciences, 23(1), 30.

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*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.