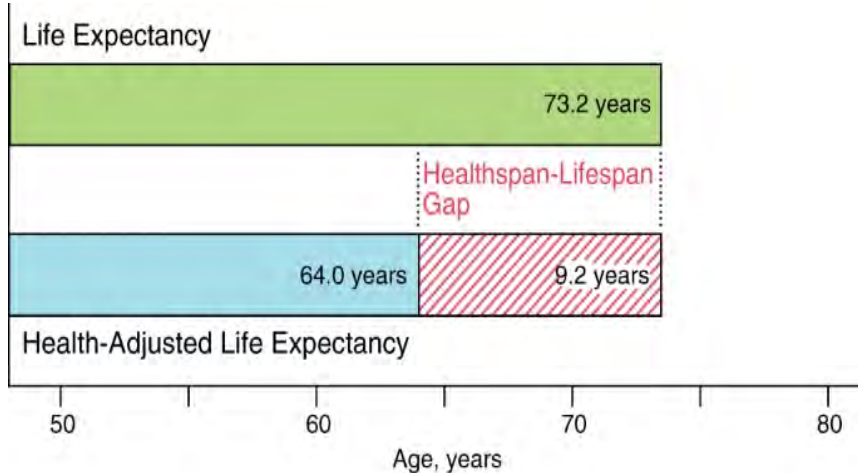




“INFLAMMAGING’ AND CARDIOVASCULAR DISEASE

Aging Related Global Trends

There are two aging-related global trends that have significant health implications. First, life expectancy is steadily on the rise around the world due to advancements in healthcare, sanitation, nutrition, education, and social/economic conditions, resulting in an increasing proportion of older adults. In fact, it is projected that by 2050 there will be more than 2.1 billion people older than 60 years of age. There will be more persons 60 years of age or older on the planet than there will be adolescents and youth 10-24 years of age.¹ It is further projected that the number of individuals 80 years of age and older will number 425 million.¹



*“Aging is an overarching risk factor for the development of chronic diseases, including cardiovascular diseases to the extent that some investigators predict there will be a “pandemic” of age-dependent cardiovascular-related diseases and disorders”.*⁶

Second, along with the increase in longevity there has been a concomitant increase in age-related diseases such as cardiovascular disease (CVD), among others (e.g., cancer, diabetes and Alzheimer’s).² This has created a gap between health span (number of years living disease-free) and lifespan (total number of years lived) where people can live a substantial portion of their lives without quality of life ridden with and suffering from illness and disability from chronic diseases.³ Using a metric called HALE (healthy life expectancy), the World Health Organization estimated that there is nearly a nine-year gap between life expectancy and health-adjusted life expectancy, which represent population-level measures of lifespan and health span, respectively.^{4,5}

Ideally, it would be preferable to have lifespan and health span unfold together for as long as possible without much of a gap as people move through the aging process. However, given that aging is a predictable inexorable process characterized by progressive deterioration of physiological function leading to morbidity and mortality and given the dominance of unhealthy, age-accelerating diet and lifestyle behaviors and practices, more than a few people may spend even more than nine years in a debilitating state of ill-health before they die.

- It turns out that chronic low-grade systemic inflammation (called inflammaging) is a well-established hallmark of aging. Inflammaging is recognized as an independent risk factor and primary pathological driver in the development of CVD, among other diseases. There is an impressive body of research demonstrating that Inflammaging is a significant, life-threatening risk factor for CVD.
- The good news is that medical nutrition therapy involving the strategic use of diet, micronutrients (vitamins and minerals), macronutrients (protein, carbohydrate, and fat), phytonutrients/bioactive compounds (plant-based nutrients) can serve to help prevent and moderate inflammaging. This is where Strauss Naturals botanical-based products can serve a useful purpose in supporting overall cardiovascular and immune system support.



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CORONARY ARTERY DISEASE



Facts About CAD

- Most common form of heart disease in the U.S, Canada and globally.
 - A leading cause of death in the United States, Canada and globally.
 - Atherosclerosis is a primary cause of CAD and a leading cause of mortality and morbidity globally.
 - Atherosclerosis is a primary cause of CAD and a leading cause of mortality and morbidity globally.
 - Signs and symptoms include heart attack, cardiac arrest, chest pain (angina), shortness of breath (dyspnea), fatigue.
 - Overtime weakens the heart muscle leading to arrhythmias, cardiac arrest, cardiogenic shock, and heart failure.
- Like high blood pressure, CAD is also a “silent killer” because many people may not have any symptoms until they experience a heart attack.
 - In terms of coronary events (e.g., myocardial infarction/heart attack & death) associated with CAD, approximately 635,000 people experience a first-time heart attack and 300,000 individuals suffer a recurrent heart attack annually.

CAD Risk Factors

The modifiable risk factors associated with CAD are as follows and are the same as risk factors associated with atherosclerosis:

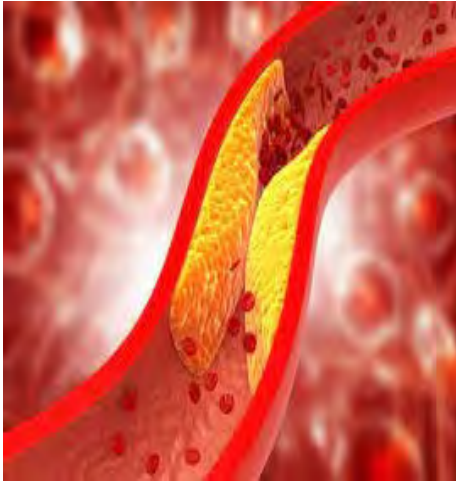
- | | |
|--|---|
| • High blood levels of low-density lipoprotein (LDL) cholesterol | • Smoking |
| • High blood levels of lipoprotein a | • Obesity |
| • Low blood levels of high-density lipoprotein (HDL) cholesterol | • Physical inactivity |
| • Diabetes mellitus (particularly type 2) | • High level of apoprotein B (apo B) |
| | • High blood levels of C-reactive protein (CRP) |

The non-modifiable risk factors for CAD include:

- **Age** - Prevalence increases after 35 years of age for both men and women where the lifetime risk of developing CAD after 40 years of age is 49% men and 32% for women
- **Gender** - Men at increased risk compared to women
- **Ethnicity**: Blacks, Hispanics, Latinos, and Southeast Asians at an increased risk of morbidity and mortality from CAD
- **Family history** – Those with a family history of developing CAD before 55 years of age are at increased CAD mortality risk.



CORONARY ARTERY DISEASE



Strauss Heartdrops® - Atherosclerosis & AGE

- Atherosclerosis, a hallmark of CAD, is an artery-occluding, pro-inflammatory chronic disease characterized by calcified atherosclerotic lesions (i.e., calcified plaque) in the coronary arteries, resulting in the hardening and narrowing of the arteries, the severity of which is measured by a coronary artery calcium (CAC) test.
- At the same time, aged garlic extract (AGE) found in **Strauss Heartdrops®** has become a hallmark in treating, preventing and managing atherosclerosis, thereby, being cardioprotective against CAD.
- AGE contains a number of biologically active sulfur-containing amino acids, such as S-allylcysteine (SAC), S-1-propenylcysteine (S1PC) and S-allylmercaptocysteine (SAMC) documented to improve atherosclerosis by way of their anti-inflammatory and antioxidant properties.

With respect to atherosclerosis as the mechanism of action for CAD, a compelling body of research when taken together has demonstrated that AGE and its sulfur-containing compounds serve to:

1. **Slow and reduce coronary artery calcification progression**
2. **Reduce and regress low attenuation plaque** (i.e., noncalcified fatty plaque)
3. **Attenuate moderate or severe arterial inflammation**
4. **Reduce arterial-related oxidative stress**
5. **Prevent platelet aggregation leading to arterial blood clots which increase the risk for heart attacks and strokes**
6. **Reduce CAD- and heart attack-related risk factors such as pro-inflammatory cytokines** (e.g., C-reactive protein/CRP, tumor necrosis factor alpha, interleukin-1 and -6) even in those who are at cardiovascular risk and already suffering from hypertension, hyperlipidemia, hyperglycemia, diabetes/insulin resistance and metabolic syndrome.



Other Medicinal Ingredients in Strauss Heartdrops®

In addition to AGE, **Strauss Heartdrops®** contains a blend of six other medicinal ingredients that work synergistically with one another and AGE to counteract CAD by having a direct and positive effect on atherosclerosis in the following ways:

- **Hawthorn Fruit, Flower, Leaf** - Lowers high blood pressure, reduces LDL cholesterol, reduces oxidative stress in the arteries
- **European Mistletoe Leaf** – Reduces vascular inflammation, reduces blood pressure
- **Motherwort** – Reduces blood pressure, prevent blood clots, reduces platelet aggregation
- **Cayenne Fruit** – Reduces blood pressure
- **Bilberry Leaf** - Prevents oxidation of LDL cholesterol, prevents buildup of plaque in coronary arteries, prevents blood clots, balances blood pressure
- **White Willow Bark** – Reduces inflammation, helps prevent blood clotting



CORONARY ARTERY DISEASE

Strauss Heartdrops® - Arterial Health & Support

- The human heart is a phenomenally powerful pump supplying fresh oxygenated, nutrient rich blood to every cell, tissue and organ in the body. It is paradoxically durable and capable of a sustained workload but vulnerable and susceptible to CAD.
- CAD is a direct consequence of atherosclerosis, an inflammatory disease process involving the gradual accumulation of plaque taking the form of lipid laden lesions (atheroma's) on the inner walls of the coronary arteries.
- CAD contributes to premature aging of the arteries which in turn accelerates the aging of the cells, tissues, organs and organ systems of the body
- If your arterial health is compromised by CAD, then your overall health is compromised in that CAD inhibits the delivery of life-giving oxygenated blood and nutrients throughout the body via the arteries.
- You are only as healthy and old as your arteries.
- **Strauss Heartdrops®** promote arterial health by providing overall support for the proper structure and function of your arteries.

Prevention, Treatment & Management of CAD

When it comes to the prevention, treatment and management of CAD (i.e., hardening and narrowing of the coronary arteries caused by calcified plaque), AGE, a significant and substantial component of **Strauss Heartdrops®**, has been demonstrated to be:

- **Anti-inflammatory** (reduces inflammation associated with arterial damage)
- **Anti-atherosclerotic** (slows progression of atherosclerosis)
- **Anti-atherogenic** (prevents formation of arterial atheroma's/plaques)
- **Anti-fibrinolytic** (prevents blood clots and their blocking of arterial blood flow)
- **Anti-platelet** (prevents platelet aggregation leading to formation of blood clots in the arteries due to arterial damage)
- **Anti-hyperlipidemic** (reduces lipid levels in the blood)
- **Anti-hyperglycemic** (lowers elevated blood glucose levels)
- **Anti-oxidative** (prevents free radical/oxidative damage to LDL in the intima of endothelial cells covering the luminal surface of the arteries)
- **Anti-hypertensive** (prevents and lowers high blood pressure, a risk factor for CAD).



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