CardiOS – new strategies for healthier ageing

One of the realities of life is that ageing is inevitable. Clearly, some of us age more ‘gracefully’ than others, with some retaining a keen mind even though the physical form visibly changes. We may blame it on genetics or we may blame it on lifestyle but in truth, we know little about how to modify this process. Two important parts of the ageing puzzle have recently been revealed and nutrigenomically-active CardiOS directly addresses these aspects of the ageing process. More importantly, CardiOS is especially relevant to the biochemical needs of men and women facing andropause and menopause. Simply put, CardiOS removes calcium from blood vessels where it doesn’t belong and puts into bone where it does belong!

The ‘Anti-aging’ Movement

Typical ‘anti-ageing’ recommendations have included diet and exercise but with a heavy emphasis on recommending replacement hormones. The term ‘anti-aging’ is a nonsensical notion; surely, this would be better described as ‘healthy’ aging. Some proponents of ‘anti-aging’ promote the replacement of a range of hormones that were present at higher doses in the younger person. Hormones naturally decline as we age but not everyone is convinced that replacing them supports Mother Nature’s principles.

Similarly, some people think that taking mega-doses of so-called ‘antioxidant’ vitamins will slow down the ageing process. However, this approach has not met with the expected outcomes2. In fact, large-scale studies have shown that excessive intake of vitamins such as Vitamins A, E, D and beta-carotene have, in a number of cases caused serious side effects. It appears that these unwanted effects occur because the vitamins in doses greater than one could consume as food mask the signals cells use to activate their built-in defences3.

Missing pieces of the age management puzzle

The popular approach to age management has neglected two critical aspects of human physiology:

1. **THE STATE OF THE BLOOD VESSELS.** When blood vessels become blocked by cholesterol deposits which later become calcified, the compromised circulation will have secondary effects throughout the body; all aspects of health and ageing will be affected.

2. **THE STATE OF THE BONES.** Loss of bone structure starts as early as age 35 and leads to ready fractures as the years progress. As we age, osteoporosis leads to shrinkage, stooping and other abnormal curvatures of the skeleton. In the elderly, poorly-healing fractures contribute to serious disability and sometimes to death.

Dealing with the tricky ‘calcium’ questions

Public health messages have encouraged us to consume more calcium – typically as more dairy food and/or calcium supplements. Surprisingly perhaps, even wide scale adoption of this practice has not protected us from osteoporosis.
Before we fill in the missing pieces of the puzzle, it is worth considering that there is much about calcium nutrition that we have not understood and the 5 questions below have never been satisfactorily answered by the calcium story. In fact, what ‘authorities’ have been promoting about calcium nutrition has never really ‘stacked up’!

Here are the five ‘bothersome’ calcium questions we can now answer!

1. Why do populations who traditionally consume little calcium show low levels of osteoporosis? (eg Singapore and Hong Kong)
2. Why do individuals and entire populations who consume large amounts of calcium typically exhibit high levels of osteoporosis? (eg United States and New Zealand)
3. Why does a 2015 systematic review of 44,505 individuals conclude that there is no clinical evidence that increasing calcium intake from dietary sources prevents fractures?
4. Why did the same research analysis show that calcium supplementation increases risk of myocardial infarction?
5. And finally, how can the same individual simultaneously develop osteoporosis and arterial calcification?

Answering the unanswerable questions

As it turns out, the answer lies with Vitamin K, a vitamin found in green leaves as Vitamin K1 which we once thought was only associated with blood clotting. In the last decade or so, scientists have discovered that Vitamin K does much more – and is an important key to several aspects of the ageing process.

Figure 1. Available calcium in the food supply compared with incidence of hip fractures in women of different nations. Calcium is consumed in higher amounts in those with the highest level of fractures.
Vitamin K1 vs Vitamin K2

More importantly, the form of Vitamin K that plays a major role in regulating calcium distribution is Vitamin K2 – not the form found in Western diets in the quantity needed. Vitamin K2 is found abundantly in a fermented soy product, Natto which is eaten mostly by the Japanese. In Western diets, there are only small amounts of Vitamin K2 found in other foods. The chart below will show how other foods compare with Natto in supplying Vitamin K2.

How does Vitamin K2 work?

Vitamin K2 acts as a kind of ‘spark plug’ to activate several important enzymes in human cells.

A compound called Osteocalcin is inactive until it is transformed by this Vitamin K-dependent enzyme. Once activated, Osteocalcin can bind calcium – without activation, it can’t. Osteocalcin is needed to carry calcium into bone.

So, whilst we thought we needed to consume more and more calcium to prevent osteoporosis, we now know even modest amounts of calcium are enough – as long as the calcium can get to where it needs to go – bones and teeth.

Another Vitamin K-dependent protein, Matrix GLA protein (MGP) works with calcium to ensure that it doesn’t deposit in blood vessels. MGP also binds to any calcium already lodged in blood vessels and ‘sweeps’ it back into the bloodstream.
How does this affect ageing?

Essentially, when calcium builds up in arteries instead of bones – the result is an individual who is developing cardiovascular disease and osteoporosis at the same time. These effects are independent of cholesterol metabolism or calcium intake; there is even limited benefit from the addition of vitamin D without also adding Vitamin K.

The functions of Osteocalcin extend well past bone health. Perhaps remarkably, Osteocalcin stimulates testosterone synthesis and insulin sensitivity; this may have implications in Type 2 diabetes and male fertility, although this has not yet been researched.

What’s the solution?

The solution to this dual problem is to increase dietary or supplemental Vitamin K – but not any Vitamin K will do. The Vitamin K1 from green plants is not capable of acting as the ‘spark plug’ needed to activate the osteocalcin. The Norwegian scientists who have extensively researched this field found that 180 mcg daily was the dose which gave the best response. (CardiOS supplies 180 mcg daily of Mk-7)

CardiOS offers a 4-pronged strategy

**Vitamin K2 (MenaQ-7).** CardiOS contains the daily dose of the same Vitamin K2 (MenaQ7) used in the clinical trials that demonstrated significant benefit in both arterial and bone status.

The **Cortisol-DHEA Effect.** It is well-known that as we age, our DHEA levels decline while cortisol increases; this results in poor stress management and elevated inflammation. CardiOS contains a branded source of withanolides, Sensoril® which has been used in clinical trials to demonstrate its ability to significantly and favourably reduce the Cortisol:DHEA ratio.

Sensoril has also been shown to significantly enhance endothelial function and improve arterial resistance. Sensoril has also been shown to significantly reduce subjective levels of anxiety and mood disturbance. It can assist in reducing age-related cognitive impairment and in normalising sleep by its ability to reduce cortisol.

**Vitamin D3.** In addition to the known effects of Vitamin D in calcium absorption, the vitamin works in concert with Vitamin K in the synthesis of the osteocalcin protein. When Vitamin D binds to the Vitamin D receptor (VDR), it activates a gene which codes for the precursor protein to Osteocalcin. And so we see an intricate and interactive web linking Vitamin D and Vitamin K. CardiOS includes a daily dose of 1000 IU of Vitamin D3.

**Sulforaphane.** CardiOS contains a daily amount of 200 mg of EnduraCell as a source of sulforaphane (SFN). In CardiOS, EnduraCell broccoli sprout powder has been included because it SFN activates an enzyme which keeps Vitamin K2 in its active state. It is recommended that CardiOS is taken in conjunction DefenCell which provides a further 1000 mg of SFN, together with a range of micronutrient and other ingredients for optimising cellular defences.
What CardiOS does not contain

**Calcium.** Recent research has shown that osteoporosis is less likely to be associated with calcium deficiency than with *abnormal calcium distribution*. CardiOS does NOT include calcium. Where some patients may need to increase their dietary or supplemental calcium, it can be added if required, at the discretion of the clinician.

Summary:
For the mature health-conscious patient, CardiOS addresses key issues associated with well-being and ageing. It is especially suited to those with established cardiovascular disease or osteoporosis as well as those at risk of developing these conditions. It is also suited to those in this age group who are experiencing anxiety states and cognitive decline.

As with all Cell-Logic formulations, CardiOS has been developed on a foundation of peer-reviewed evidence underpinned by a philosophy that supports the principles of cellular defence. The four ingredients that make up the CardiOS formulation have been combined at relevant doses for their mutually-supportive and nutrigenomic effects.

(Clinicians may obtain more information by referring to the Technical Data for this product)

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**Christine Houghton** B.Sc., R.Nutr., Ph.D Cand.

_Nutritional Biochemist_

**REFERENCES**

A 4-pronged strategy to address Bone Loss & Arteriosclerosis

Improves Endothelial Function:
- ↓Total cholesterol
- ↓LDL
- ↓Triglycerides
- ↓C-reactive protein
- ↓MDA
- ↑NO

Reduces Stress Response via HPA axis:
- ↓Cortisol
- ↑DHEA
- ↓Blood pressure
- ↓Pulse rate

Promotes synthesis of:
- Osteocalcin
- Matrix GLA protein ESSENTIAL for calcium binding

Activates Nrf2, leading to enhanced:
- Redox balance
- Detoxification
- Vitamin D receptor activity
- Multiple Signalling Pathways

Oxidative stress → BONE LOSS

Multiple signalling pathways including:
- Upregulation of BGLAP gene required for Osteocalcin synthesis

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