



## Getting to the heart of the matter: Managing the drivers of cardiometabolic disease

### DIET

**4%** of Australians currently meet the recommended intake of fruits and vegetables

### EXERCISE

**1 in 5** Australians currently meet the recommended exercise levels

### RISK FACTORS

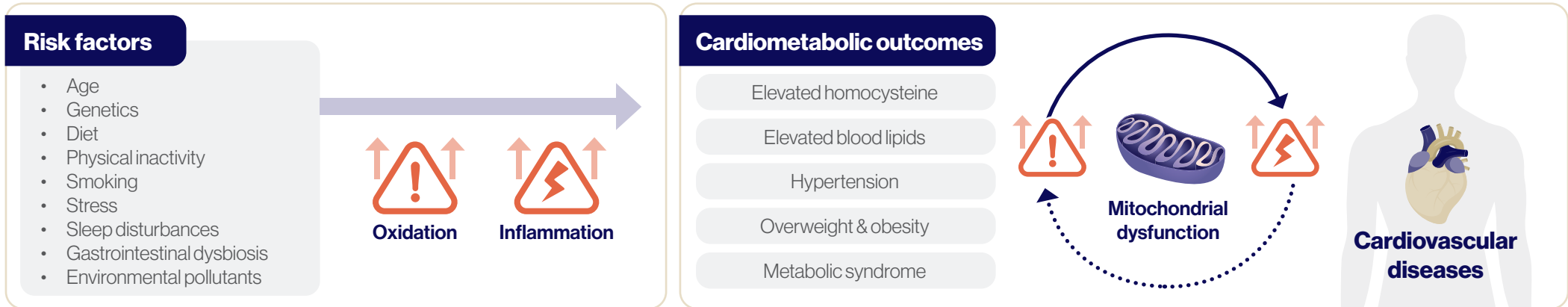
**Almost all** Australian adults (99%) have at least 1 of 6 heart disease risk factors

### #1 LEADING CAUSE OF DEATH

Cardiovascular disease is the leading cause of death and contributes **12%** to disease burden

### Cardiometabolic disease

Cardiometabolic disease or cardiometabolic syndrome, is a collection of metabolic conditions that predispose an individual to developing cardiovascular disease. Several factors increase an individual's risk of developing cardiometabolic diseases and their progression to cardiovascular disease.



### Approach to managing the drivers of cardiometabolic disease and its progression to cardiovascular disease

**1** Provide antioxidant support

**2** Reduce inflammation

Address modifiable and support non-modifiable risk factors

**3** Provide targeted cardiometabolic disease and mitochondrial support

# Addressing the drivers of cardiometabolic disease: the role of CoQ10

## CoQ10: nature's spark plug

- Coenzyme Q10 (CoQ10) is a lipid-soluble compound that is synthesised by the body via the mevalonate pathway, which also produces cholesterol.
- It has two main roles in the body:
  - **Energy production:** It plays a crucial role in the mitochondrial electron transport chain, a process in which substrates formed in the citric acid cycle are converted to adenosine triphosphate (ATP) or cellular energy.
  - **Antioxidant:** It helps control the build-up of reactive oxygen species (ROS) and helps prevent ROS-induced lipid peroxidation in cell membranes and lipoproteins.
- CoQ10 is found in highest concentrations in organs and tissues with high metabolic activity.

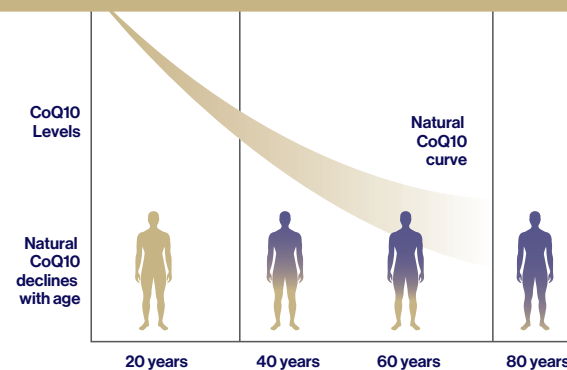
Tissue	Ubiquinone (µg/g)	Ubiquinol (µg/g)
Heart	132.0	61.0
Brain	13.4	23.0
Intestine	11.5	95.0
Muscle	39.7	65.0
Liver	63.6	95.0
Kidneys	77.0	75.0
Plasma	1.1 µmol/mL	96.0 µmol/mL

**Concentrations of ubiquinone and ubiquinol in the body.**

## Ubiquinol: CoQ10 in action

- **CoQ10 exists in the body in two forms: ubiquinone, the oxidised form, and ubiquinol the reduced or active form.**
- In cells, both forms are required for cellular energy production.
- In the circulation, more than 95% of CoQ10 is found in the active ubiquinol form.
- Ubiquinol is the form that's responsible for CoQ10's antioxidant activity.

## CoQ10 and ageing



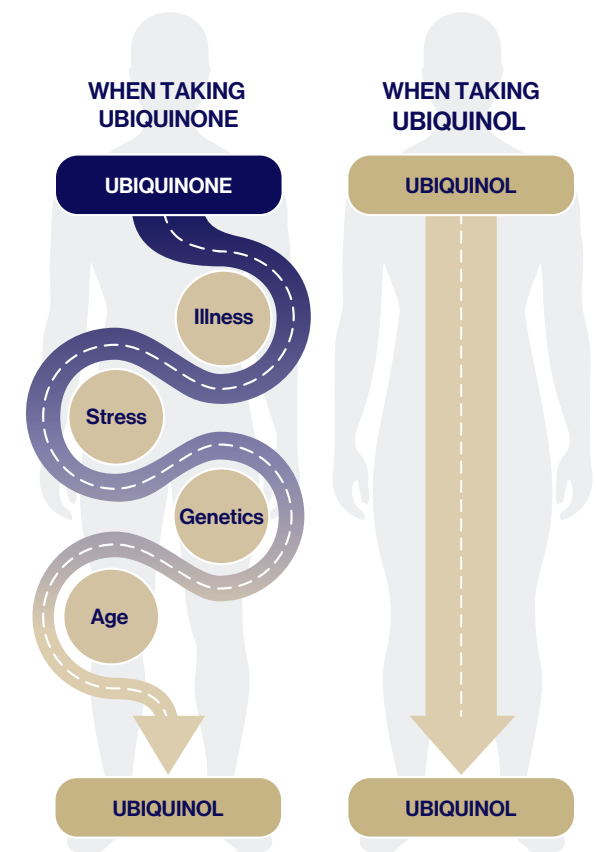
**The body's production of CoQ10 steadily declines with age.**

Other factors that may contribute to a reduction in CoQ10 levels include:

- The use of certain medications e.g. statins.
- Illnesses that increase tissue requirements e.g. cardiometabolic disease and cardiovascular disease.

## Supplemental ubiquinone & ubiquinol - what's the difference?

- Supplemental CoQ10 as ubiquinone, once absorbed, needs to be converted to ubiquinol.
- Factors such as chronic illness, genetics, stress and age might impact the body's ability to absorb CoQ10.
- Supplemental ubiquinol is rapidly absorbed and a bioavailable form of CoQ10, ready for use in the body.



# CoQ10 alongside medications

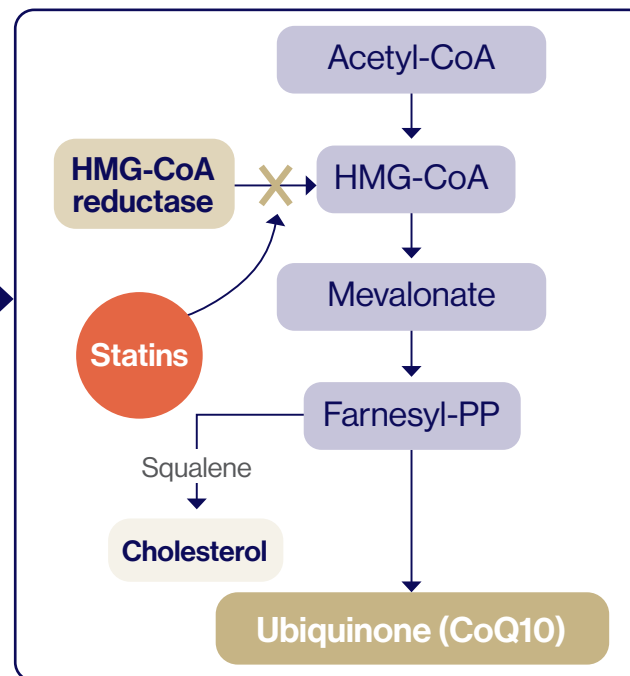


Statin drugs rosuvastatin and atorvastatin are the most widely prescribed medicines in Australia

## Medication-induced CoQ10 depletions

Certain medications may deplete CoQ10 and consequently ubiquinol levels in the body.

Medication	Mechanism
HMG Co-A reductase inhibitors (Statins)	Interfere with the endogenous synthesis of CoQ10 through their action in the mevalonate pathway.
Nitrogen-containing bisphosphonates	Interfere with the endogenous synthesis of CoQ10 through their action in the mevalonate pathway.
Antihypertensives (thiazides, hydralazine, clonidine, beta-blockers)	Inhibit CoQ10-NADH-oxidase in the myocardium. The beta-blocker with the greatest impact is propranolol.



## Reduced CoQ10 levels

- Associated with poor cardiovascular disease outcomes.
- Contribute to mitochondrial dysfunction, reduced cellular energy production and increased production of ROS.

## Statin-associated muscle symptoms (SAMS)

- Occurs in 10-25% of statin users.
- Characterised by muscle pain and fatigue, partly due to the effect of the medication on mitochondrial function.

## Recommendation

**Alongside statin medication and to help prevent SAMS: CoQ10 (ubiquinone)/ubiquinol: ≥150 mg daily** (dose and form is case-dependent)

## Medication - CoQ10 interactions

CoQ10 and ubiquinol have strong safety records for most groups of people, however there are some potential medication interactions to be aware of.

Medication	Nature of Interaction	Evidence	Likelihood of Interaction	Severity of Outcome	Recommendation
Anticoagulant and antiplatelet agents	May decrease drug effect.	Conflicting data. Clinical trial found no interaction. Multiple case reports of changes to INR.	Possible	Moderate - High	Monitor patient. Regular monitoring of INR in patients taking warfarin is recommended.
Antihypertensives	May increase drug effect.	Meta-analyses in patients taking antihypertensive drugs.	Likely	Moderate - High	Concomitant use may have an additive hypotensive effect. Monitor patient for signs of hypotension.
Hypoglycaemic drugs	May increase drug effect.	Conflicting data from clinical trials.	Possible	Moderate	Concomitant use may have an additive hypoglycaemic effect. Monitor patient for signs of hypoglycaemia.

# Key therapeutics for supporting cardiometabolic health

INGREDIENT	1 Foundation support		3 Targeted healthy cardiovascular system support					
	Antioxidant support/ reduce ROS	Anti-inflammatory support	Cellular energy production	Blood vessel health	Blood lipid support	Homocysteine support	Blood glucose support/weight management	Manage and prevent SAMS
Ubiquinol	≥150 mg		≥150 mg		300 mg			≥150 mg
CoQ10	≥150 mg		≥150 mg		400 - 500 mg			100 - 600 mg
Omega-3 EPA+DHA		≥2700 mg			3400 mg			
Magnesium (orotate)		≥200 mg	200 mg					
Vitamin B6 (Pyridoxal 5-Phosphate)						20-50 mg		
Vitamin B12			500 - 1000 micrograms			500 - 1000 micrograms		
Folinic acid (active folic acid)						500 - 5000 micrograms		
Vitamin D3				1000 IU				
Vitamin K2				180 micrograms				
Vitamin E (mixed tocopherols)	245 mg	245 - 490 mg			245 mg			
Chromium							400 micrograms	
Alpha lipoic acid	400 - 1200 mg							
Herbal complex: GLUTForce® (bitter melon & goat's rue)							200 mg dry concentrate	
Probiotics	Foundation support for all aspects of health including cardiovascular health. Dysbiosis of the oral and gut microbiomes is directly correlated with cardiometabolic disease and cardiovascular disease progression.							

Dosages are per day.

**HAVE QUESTIONS?** Contact our Naturopathic Advisory Service:  
[advisory@bioceuticals.com.au](mailto:advisory@bioceuticals.com.au) | **1300 650 455**

To learn more on key ingredients associated with cardiometabolic health, visit: [www.bioceuticals.com.au/product/ingredient](http://www.bioceuticals.com.au/product/ingredient)



**Preventative cardiology: The Essential Role of Ubiquinol**

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Scan the code to join us for this exclusive webinar on 30th October 2024.

