

# Nutritional Remedies for the Heart

This leaflet is based on the work of the American cardiologist, Stephen Sinatra. He has made some important breakthroughs in the treatment of heart disease using nutritional remedies. He regularly gives talks to other cardiologists regarding this approach. In his book the Sinatra Solution, he describes many almost miraculous cures using his key nutrients – what he calls his awesome foursome. The book also contains some complex biochemistry the results of many scientific and medical studies and some amazing case histories. In my experience few cardiologists are aware of these studies.

Most pharmaceutical drugs used in heart disease work by blocking enzymes. This has its uses but what the body ideally needs is the right nutrients so that healing can take place. The heart needs more energy than any other organ. Energy is normally produced within the cells in specialised units called mitochondria. If these are not working properly then no amount of drugs or surgery can put you right. Dr Sinatra's remedies are aimed directly at the mitochondria helping them work more efficiently. As all cells need mitochondria to produce energy, this approach will not only benefit the heart but will benefit every cell in the body.

## How the Mitochondria Work (this is an oversimplification)

Mitochondria produce 90% of the body's energy. They do this by producing a substance called ATP. This is shunted out of the mitochondria where it is broken down within the cell to produce ADP plus energy. This ADP is recycled – shunted back into the mitochondria to produce more ATP and so forth. Storage of ATP is limited and if there isn't enough ATP available the cell may break down the ADP to AMP which also produces energy. However, this is a poor strategy as AMP can't be recycled and is lost in the urine. The body's energy supplies then dwindle.

Active cells, like heart cells need large and continuous supplies of ATP. **In many heart diseases, such as heart failure, the energy pool can be depleted by 40-50%.** So, recycling of ADP is critically important. Two substances are essential for this recycling: Coenzyme Q10 and L Carnitine. Recycling would be impossible without Co-enzyme Q10. L Carnitine is also critically important as it carries the ATP across the membrane of the mitochondria. The key substance needed to replenish energy in the mitochondria is called D Ribose. There is no other substance that can do this. It acts like a battery charger and the amount of charge is limited to the amount of D Ribose available. For these energy pathways to work the body uses enzymes. These need magnesium to function properly. Magnesium is also involved in the recycling process. The problem is that any heart disease will put a strain on the mitochondria and can lead to depletion of these nutrients.

## Coenzyme Q10

There have been several hundred major studies on Co-Enzyme Q10 and 12 International Symposia which alone have generated 450 scientific papers. Coenzyme Q10 is found in broccoli, cabbage, spinach, nuts, fish, pork, chicken and beef. In spite of this most people don't get enough from the diet and Coenzyme Q10 levels decline with age. Coenzyme Q10 deficiency is common in heart disease, especially if it is severe. **Certain drugs, notably statins, deplete Coenzyme Q10. Statins reduce coenzyme Q10 by about 20%.** Other drugs block its effects including beta-blockers, phenothiazines and tricyclic anti-depressants.

## Heart Failure

Several major studies, including a meta-analysis (combination analysis of many published studies) have shown **Coenzyme Q10 enhances heart function in patients with heart failure.** This is not surprising as studies have consistently noted patients with heart failure have Coenzyme Q10 deficiency. One study showed patients were able to stop one to three of their conventional drugs. One difference compared with conventional drugs was the near absence of side-effects. Studies have also shown benefit in patients with cardiomyopathy and in those waiting for heart transplants. **In congestive heart failure 75% survived three years compared to 25% on placebo.** It is the treatment of choice in Japan (shown effective in 20 controlled trials). It works well with vitamin B6.

## Other Heart Disease

Coenzyme Q10 has also been shown to reduce irregular heart beats and decrease the frequency of angina in published studies. It reduces cardiac events after heart attacks. It helps in mitral valve prolapse. It can also help in high blood pressure but not for everyone. It has been found that 55% responded with a marked reduction in blood pressure but the other 45% didn't respond at all. The dose used by Dr Sinatra is quite high: 200 - 1000mg daily depending on the condition. It can be prescribed but can also be obtained from health food stores. It is best absorbed with food, especially fatty food.

## L Carnitine

The heart gets most of its energy from the breakdown of fatty acids. To transport these fatty acids into the mitochondria the body needs L Carnitine. Put simply L Carnitine allows the heart to do more with less oxygen. Unfortunately, L Carnitine is another substance which often diminishes with age. The major sources of L Carnitine are mutton (richest source), lamb and beef so it can be deficient in vegetarians. Muscle cramps and muscle fatigue can occur with carnitine deficiency. L carnitine has been shown in several studies to improve angina and it also limits the damage done by a heart attack and reduces mortality and irregular heart beats after a heart attack. It has also been shown to reduce mortality from heart failure by 30% in one study and other studies have shown reductions in cardiac arrhythmias (irregular beats). **Dr Sinatra has found the combination of Coenzyme Q10, L Carnitine,**

## **magnesium, fish oils and hawthorn to be very effective in reducing irregular heart beats.**

Patients with chronic kidney disease are especially susceptible to carnitine deficiency, which is lost through dialysis, and perhaps this explains the high incidence of irregular heart beats in this condition. L carnitine also reduces cholesterol and triglycerides and increases HDL (good cholesterol) which is not surprising as it is involved in transporting fatty acids across membranes.

Typical doses of L carnitine used by Dr Sinatra range from 500 - 2,500mg. It should be taken away from food or before food. (Acetyl L Carnitine is very similar but is slightly better for the brain whereas plain L Carnitine is better for the heart but there is not a lot of difference).

## **D Ribose**

Unfortunately, neither Coenzyme Q10 or L carnitine can rebuild the energy pool once it has been depleted by heart disease. D Ribose is essential for this pathway. It is primarily found in red meat, particularly veal. D Ribose as a supplement can be difficult to find. Dr Sinatra usually prescribes 5 to 15 grams daily which can be added to water, green tea, coffee and taken throughout the day.

There have now been over a hundred studies that have shown its beneficial effect. It has been shown to increase exercise tolerance and delay the onset of angina. A large study in 2003 showed that D Ribose increased exercise tolerance and quality of life in patients with heart failure. It also lowers blood sugar.

## **Magnesium**

Magnesium helps in a number of heart conditions including angina, irregular heart rhythms, cardiomyopathy, heart failure, stroke and hypertension. It is the fourth most abundant mineral in the body and necessary for over 300 enzymatic systems. A study showed that those who consume the least magnesium were found to have double the rate of heart disease compared to those that consume the most. It is reduced by alcohol, sugar, coffee, diuretics (water pills) and acid-blocking drugs (as the magnesium can't be absorbed without stomach acid). Emotional stress drives up cortisol and this depletes magnesium. One third of elderly females are magnesium deficient. Magnesium is found in green leafy vegetables, seeds and nuts. Supplements are widely available at health food shops. Dr Sinatra typically uses 4-800mg daily. A cupful of Epsom salts (magnesium sulphate) in a hot bath for at least half an hour is useful as magnesium is well absorbed through the skin but not well absorbed through the gut.

**People deliberately put on a low magnesium diet develop supraventricular plus ventricular ectopic beats (skipped or missed beats).** Patients with low magnesium have three times the risk of stroke and low magnesium is a good predictor of mortality from heart failure. Magnesium improves control of diabetes and people with low magnesium have been

shown to be more likely to develop diabetes. Those with highest magnesium levels had a 33% reduction in the risk of developing diabetes. Magnesium reduces symptoms of mitral valve prolapse, including palpitations.

## **Other Remedies**

I would add two other nutrients, known to be beneficial to the heart when treating a heart-related problem. These are:

### **Vitamin E**

The Shute brothers showed vitamin E was highly effective in stopping angina, it significantly reduced irregular heartbeats and it caused “thinning of the blood”. The standard dose they used was 800 IU daily but they would increase the dose as high as 3200 IU daily to obtain benefit where needed. (See Supplement section of leaflet, Food, Lifestyle and the Heart for more detailed information).

The type of Vitamin E is important. Mixed tocopherols and d alpha tocopherol are fine but the synthetic version dl alpha tocopherol is not such a good choice.

### **Fish Oils**

A great deal of research has been done on fish oils and they are known to reduce irregular heartbeats, notably after heart attacks (see leaflet Fats: the Good and the Bad Fats for more details).

### **Iodine**

This has been found to be low in **dilated cardiomyopathy**. It is easy and cheap to supplement. See iodine leaflet.

### **Copper**

Copper deficiency may be one of the most important factors in ischaemic heart disease – see <https://openheart.bmj.com/content/openhrt/5/2/e000784.full.pdf?c.t>.

It is thought that 70-80% of people are deficient in copper. See copper leaflet for more information.

### **Vitamin D**

**Vitamin D deficiency is typically found in heart failure and correlates with mortality.** A study by Patel found those hospitalised with cardiovascular disease, strokes and angina had lower levels of vitamin D than controls and the level of deficiency correlated with severity of the disease.

Those with a Vitamin D level below 20nmol/l had a 90% increased risk of peripheral vascular disease compared to those with levels above 30nmol/l.