DR.VEGAN®

# Heart health decoded

*Practical tools for prevention*

**Practitioner Toolkit** • *For practitioner use only*

Cardiovascular disease is the leading cause of death worldwide.[1] In the UK alone, each year, over 100,000 people are admitted to hospital due to heart attacks - every 5 minutes, one person is admitted to the hospital for a heart attack.[1]

Strokes are the biggest cause of severe disability in the UK. Both heart disease and vascular dementia are linked to genetics.[1]

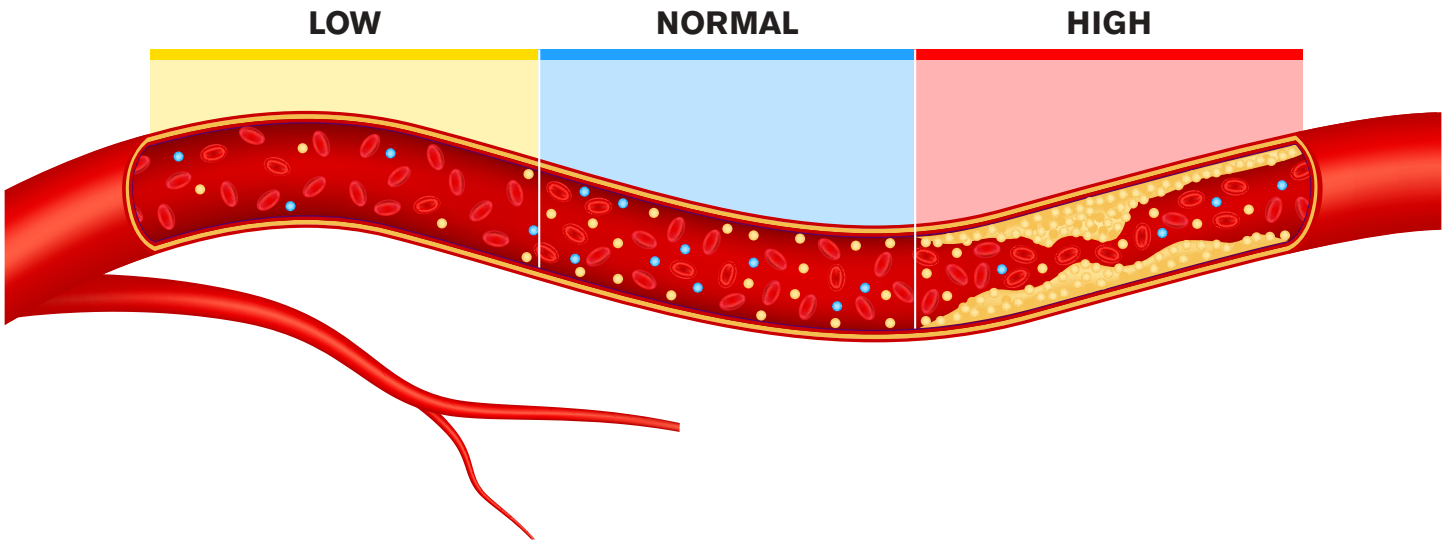
There are around **1.4 million** heart attack survivors currently living in the UK.[1]

**34,000** deaths each year occur due to strokes.[1]

## OXIDISED CHOLESTEROL

Low-density lipoprotein (LDL cholesterol) can become oxidised when it is exposed to oxidative stress and inflammation. Oxidised cholesterol becomes hard and forms plaques on artery walls that can break off and trigger clots. The buildup of oxidised cholesterol is referred to as atherosclerosis. Researchers have recommended using oxidised low-density lipoprotein as the biggest indication of cardiovascular disease risk.[2]

## CHOLESTEROL LEVELS



## DO WE NEED CHOLESTEROL?

Cholesterol is needed when in balance. Many hormones and cofactors, such as coenzyme Q10, are synthesised from cholesterol. Cholesterol is a vital component of brain cell membranes and plays an essential role in brain function and development. Cholesterol is a significant constituent of the central nervous system and plays an important role in developmental pathways. Cholesterol is also necessary for the formation of synapses, with cultured neurons from the mammalian central nervous system (CNS) requiring glia-derived cholesterol to form numerous and efficient synapses.

Cholesterol becomes dangerous once oxidised and allowed to form plaque in the arteries. Therefore, as practitioners, we need to ensure that cholesterol is in the right place in the body, used appropriately, and not oxidised or stored in the arteries.

**VLDL:** Very-low-density lipoprotein transports triglycerides from the liver to various tissues in the body. It is the main carrier of triglycerides in the blood. VLDL contains a high proportion of triglycerides (about 55-65%) and relatively low levels of cholesterol (about 10-15%).

**LDL:** Low-density lipoproteins' role is to carry cholesterol from the liver to the cells of the body. The cells use cholesterol for various purposes, including cell membrane construction and the production of hormones. LDL contains a higher percentage of cholesterol (about 50-60%) compared with VLDL and a lower amount of triglycerides.

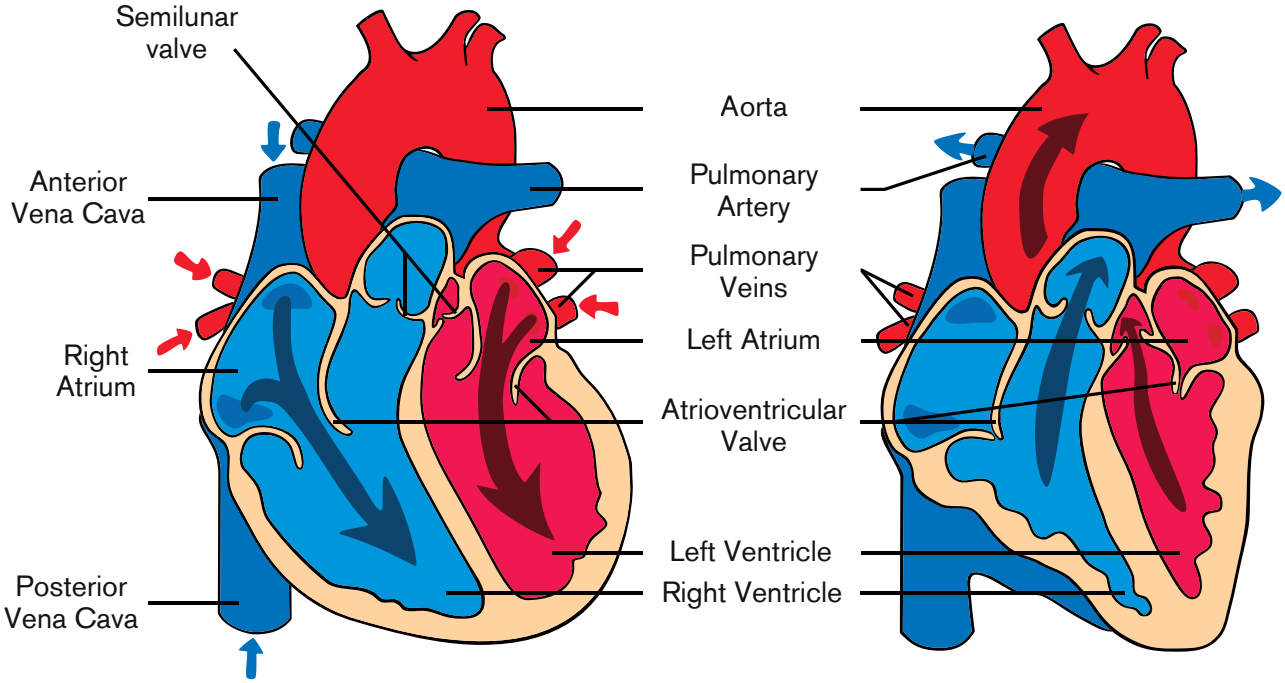
**HDL:** High-density lipoprotein is responsible for removing excess cholesterol from the bloodstream and transporting it to the liver, where it is either reused or excreted. This helps prevent cholesterol from building up in the arteries. HDL is composed of a higher proportion of protein (about 50%) and less cholesterol (about 20-30%) compared to other lipoproteins. High levels of HDL are considered protective against heart disease. It helps reduce the risk of plaque buildup in the arteries, improving cardiovascular health.

Cholesterol is absorbed from the diet and created by the liver. Cholesterol is also synthesised by macrophages when they are activated through MyD88-dependent PRRs, resulting in the general accumulation of total cellular cholesterol.[5]

## NICE CKS CLINICAL GUIDELINES FOR TARGET CHOLESTEROL LEVELS[3,4]

| Low-density Lipoprotein | Total non-HDL Cholesterol Levels | High-density Lipoprotein | Total Cholesterol |
|---|---|---|---|
| 2.0 mmol/L or less | of 2.6 mmol/L or less | above 1.0mmol/L for men or above 1.2mmol/L for women | 5 mmol/L or less |

## DIASTOLE & SYSTOLE OF THE HEART




## PHYSIOLOGY OF HEART HEALTH

The cardiac contractability, ventricular performance and oxygen requirements are determined by:[20]

- Preload (the loading condition of the heart at the end of its filling phase and before contraction, determined by its ability to stretch).
- Afterload (the force resisting myocardial fibre contraction).
- Availability of oxygen, fatty acids and glucose.
- Heart rate and rhythm.
- Amount of viable myocardium (the portion of heart muscle that remains alive and functional, even in areas affected by conditions such as coronary artery disease (CAD) or a heart attack).
- Cardiac output (the rate of blood output from the heart determined by stroke volume, heart rate, venous return, peripheral vascular tone and neurofactors).

## DIET AND LIFESTYLE TIPS FOR CLIENTS

### Consume a heart-healthy diet

The Mediterranean Diet (rich in fruits, vegetables, whole grains, lean proteins, and healthy fats) is one of the best diets for cardiovascular health.

### Fibre

Increase fibre intake (30g/day from whole grains, legumes, nuts, seeds, and vegetables).

### Eat enough protein

Proteins help keep the blood vessel walls and the heart muscle healthy. Choose lean proteins like beans, tofu, nuts, seeds and legumes.

### Keep an eye on saturated fat

Although some may benefit the body, too much can cause a problem. Limit saturated fats and replace them with unsaturated fats (olive oil, avocado, nuts).

### Consume omega 3 daily

Increase omega-3 fatty acids (chia seeds, flaxseeds, and walnuts). An additional algae oil supplement may also be beneficial.

### Eliminate processed foods

Avoid processed meats, fast foods, and packaged snacks. Focus on consuming whole foods as close to their natural state as possible.

### Limit added sugars and refined carbohydrates

Reduce sugary drinks, sweets, and white bread intake, as they can increase your risk of metabolic disease. Choose whole grains like brown rice, quinoa, and other whole grains.

### Stay hydrated

Aim for two litres of water per day. Limit alcohol (maximum one drink/day for women, two drinks/day for men).

### Regular physical activity

150 minutes of moderate-intensity exercise (e.g., brisk walking) or 75 minutes of vigorous exercise (e.g., running) per week. Include strength training (twice a week) to maintain muscle mass.

### Increase daily movement

Aim to walk instead of driving, try to take the stairs where possible and add walking breaks to your day.

### Quit smoking and limit alcohol

Seek professional help for smoking cessation. Reduce or eliminate alcohol consumption.

### Manage stress

Practice mindfulness, meditation, or deep breathing exercises. Engage in hobbies and activities that reduce stress like Yoga.

### Sleep

Get 7–9 hours of quality sleep each night. Sleep is a time for the body to heal and repair, and inadequate sleep increases the risk of cardiovascular disease.

### Monitor health regularly

Periodically check blood pressure, cholesterol, and blood sugar levels. Follow up with a doctor for risk assessments.

# HEARTPRO®

*HeartPro® is the advanced formula of Plant Sterols, Probiotics, Red Yeast Rice Extract, Chromium and essential nutrients for a healthy heart. Including a proprietary plant sterol complex (900mg) maintaining normal blood cholesterol, HeartPro® manages your cholesterol and supports a healthy heart every day.*


| | PER 2 CAPSULES | EC %NRV* |
|---|---|---|
| Phytosterol Complex | 900mg | ** |
| Ginger Root | 1000mg | ** |
| Monacolin K | 2.2mg | ** |
| *Lactobacillus plantarum* | 8 billion CFU | *** |
| Black Garlic | 300mg | ** |
| Vitamin B3 (Niacin) | 50mg NE | 312 |
| Coenzyme Q10 | 30mg | ** |
| Chromium | 200µg | 500 |
| Folate | 200µg | 100 |
| Vitamin B12 (Methylcobalamin) | 12µg | 480 |

* NRV - Nutrient Reference Value
** No NRV Established
*** At time of manufacture

## Ingredients

Phytosterol Complex (Vitasterol S-80), Red Yeast Rice Extract, Ginger Root Extract (*Zingiber officinale*), Niacin (Nicotinamide), Coenzyme Q10, *Lactobacillus plantarum*, Black Garlic Extract (*Allium sativum L.*), Chromium Picolinate, Folate (*Calcium-L-Methylfolate*), Vitamin B12 (Methylcobalamin), Capsule Shell (Hydroxypropyl Methylcellulose).

## Free from

Added Sugar, Starch, Sweeteners, Gluten, Wheat, Lactose, Dairy, Artificial Flavours, Colours and Preservatives.

## Pairs well with


GlucoBalance®


Gut Works®


Vegan Omega 3

### Directions

- Take two capsules each day 20 minutes before a meal and on an empty stomach.
- HeartPro® contains healthy active bacteria (probiotics) which are sensitive to heat, so it's also important to take it with a cold drink and at least 20 minutes before or after a hot drink.
- It can be taken long-term.

### Directions

**2-4 weeks**

Probiotics in HeartPro® support the gut microbiome, overall gut health and the gut's function in supporting your heart health. Clients should see better energy levels and an improvement in blood glucose management.

**3 weeks**

Plant Sterols could begin to manage and lower cholesterol and support a gradual decline of LDL cholesterol. Normal homocysteine levels are supported, which, along with dietary and lifestyle factors, could help significantly lower the risk of cardiovascular disease and keep the heart healthy.

**6 weeks**

Cardiovascular risk biomarkers in those with moderate hypercholesterolaemia could be decreased. Clients should begin to see a decrease in blood pressure.

**4 months-1 year**

Clients may see an Improvement in atherosclerotic plaque progression and endothelial function, particularly in those who experience high occupational stress.

## KEY INGREDIENTS IN HEARTPRO®

### PhytoSterol Complex (Vitasterol S-80)

Vitasterol S-80 is a patented blend of phytosterols, including beta-sitosterol, campesterol, stigmasterol, brassicasterol, camestanol and sitostanol. Plant Sterols and sterols are structurally similar to cholesterol, and their role in dietary supplements is to compete for absorption with dietary cholesterol. This competitive inhibition reduces the solubilisation of dietary and biliary cholesterol, which limits its absorption across the intestinal wall, reducing the amount of cholesterol entering the blood. Plant Sterols and stanols are absorbed through the same route as cholesterol; however, they do not function like cholesterol once absorbed and are quickly excreted. In animal studies, plant sterols and stanols have been shown to lower atherosclerotic lesion development and reduce atherosclerotic risk. Vitamin A and D concentrations are not affected by plant stanol and sterol consumption.[6]

### Ginger Root

Ginger reduces the buildup of fatty plaques in the arteries by preventing cholesterol oxidation. Oxidised cholesterol is more likely to stick to the artery walls and form plaques than non-oxidised cholesterol. Ginger lowers the rate at which macrophages produce cholesterol by 76%, reduces LDL oxidation by up to 60%, and reduces LDL-associated lipid peroxides by 62%.(21)  A systematic review and meta-analysis of clinical trials concluded that low-dose ginger was effective in lowering LDL cholesterol.[7]

### Monacolin K

Monacolin K is the active substance in Red Yeast Rice. Monacolin K functions as an inhibitor of the enzyme HMG-CoA reductase, which is a critical enzyme in the liver responsible for converting HMG-CoA (3-hydroxy-3-methylglutaryl-CoA) into mevalonate. Mevalonate is a precursor in the cholesterol biosynthesis pathway. By blocking this step, cholesterol production is reduced in the liver. When cholesterol production in the liver decreases due to Monacolin K, the liver compensates by increasing the number of LDL receptors on the surface of liver cells. These receptors bind to LDL particles in the bloodstream, clearing them from circulation. Research concludes that Monacolin K favourably influences lipid status parameters and atherogenic indexes.[8]

## Black Garlic

Black Garlic, also known as aged Garlic, contains a unique set of sulphur compounds not found in fresh Garlic. The allicin in Garlic gets broken down into sulphur amino acid compounds, including S-allyl cysteine and S-allylmercaptocysteine. These have a very different effect in the body compared to allicin. S-allyl cysteine and S-allylmercaptocystein have powerful antioxidant properties and, as such, aid in the protection of the cardiovascular system, including the blood vessel walls and the protection of cholesterol against oxidation. Aged Garlic inhibits angiotensin-converting enzymes, reduces cholesterol, inhibits platelet aggregation, reduces blood pressure, and increases antioxidant status.[9]

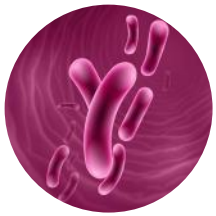
**Antioxidant properties:** S-allylmercaptocysteine (SAMC) and S-allylcysteine (SAC) scavenge reactive oxygen species (ROS), one of the most potent oxidants in the body. SAMC and SAC increase the level of antioxidants in the cells, including superoxide dismutase (SOD) and glutathione peroxidase.[10]

**Atherosclerosis:** The antioxidants in aged Garlic prevent cholesterol oxidation and protect the endothelial cells of the blood vessels from becoming damaged.[10]

**Cholesterol reduction:** Aged Garlic reduces low-density lipoprotein levels by up to 10% and increases high-density lipoprotein concentrations.[11]

**Blood pressure:** Aged Garlic reduces systolic and diastolic blood pressure[12] by promoting healthy blood vessel epithelium and normal blood vessel collagen levels. This is especially useful for those with coronary artery disease.[13] Aged Garlic stimulates nitric oxide production, which relaxes the blood vessel walls, decreases blood pressure and improves blood flow.[14]

**Blood viscosity:** Aged Garlic decreases platelet aggregation and decreases thrombotic activity.[15]



### *Lactobacillus plantarum*

*Lactobacillus plantarum* is a probiotic belonging to the class of bile salt hydrolase-active bacteria. Bacteria in this class metabolise cholesterol in the gut and prevent cholesterol resorption. After cholesterol is released in bile, it is usually reabsorbed and recycled; however, once metabolised by bile salt hydrolase-active bacteria, the bile becomes unrecyclable, and the cholesterol of the body's cholesterol stores is used up to make new bile.

### Vitamin B3 (Niacin)

Niacin increases high-density lipoprotein (HDL) levels while reducing low-density lipoprotein (LDL) and triglycerides. Niacin works by inhibiting diacylglycerol acyltransferase-2 (DGAT2), an enzyme involved in triglyceride synthesis, leading to reduced very low-density lipoprotein (VLDL) production in the liver.[16]

Niacin has anti-inflammatory properties and reduces oxidative stress and endothelial dysfunction. Niacin also improves endothelial nitric oxide (NO) bioavailability, leading to vasodilation and improved arterial function.[17]

### Coenzyme Q10

Coenzyme Q10 is a lipid-soluble antioxidant and an essential component of the electron transport chain within mitochondria, playing an essential role in ATP production. Due to the high energy demands of the heart, CoQ10 is vital for myocardial function and is particularly important in conditions such as heart failure, ischaemic heart disease, and hypertension.

CoQ10 has been shown to improve endothelial function[18] by enhancing nitric oxide bioavailability and reducing oxidative stress. It also has anti-inflammatory properties, modulating nuclear factor-kappa B (NF-κB) and reducing the expression of pro-inflammatory cytokines like TNF-α and IL-6.

### Chromium

Chromium is needed for blood sugar regulation and insulin sensitivity. It increases the expression and activation of insulin receptors on cells and leads to improved insulin uptake. Proper insulin sensitivity decreases the risk of metabolic syndrome and cardiovascular diseases.

### Folate

Folate is needed for homocysteine metabolism because it is a cofactor in the conversion of homocysteine to methionine. Raised homocysteine levels are an independent risk factor for cardiovascular disease, contributing to endothelial dysfunction, oxidative stress, and vascular inflammation.

### Vitamin B12

Vitamin B12 is another essential nutrient for homocysteine metabolism. Like folate, B12 is involved in the remethylation of homocysteine to methionine, and a deficiency in B12 can lead to hyperhomocysteinemia, increasing the risk of atherosclerosis and thrombosis.[19]

## DRUG INTERACTIONS

*Interaction Severity*

*Moderate*

| | |
|---|---|
| Anticoagulant & Antiplatelet Drugs | Ginger and Garlic may increase the risk of bleeding when taken with these drugs. |
| Antidiabetes Drugs | Ginger, Chromium and Garlic may increase the effects of hypoglycemia when taken with these drugs. |
| Nifedipine | Ginger may increase the risk of bleeding when used with this drug. |
| P-glycoprotein Substrates | Ginger may increase the absorption of these drugs. |
| Phenprocoumon | Ginger may increase the risk of bleeding when taken with this drug. |
| Warfarin | Ginger, CoQ10 and Garlic may increase the risk of bleeding when taken with this drug. |
| Cyclosporine | Red Yeast Rice may increase the risk of myopathy when taken with this product. |
| Gemfibrozil | Red Yeast Rice may increase the risk of developing rhabdomyolysis. |
| Hepatotoxic Drugs | Red Yeast Rice may increase the risk of liver damage in those taking hepatotoxic drugs. |
| HMG-Co A Reductase Inhibitors | Red Yeast Rice may increase the risk of side effects from these drugs. |
| Antihypertensive Drugs | Garlic may increase the risk of hypertension when taken with these drugs. |
| Cytochrome P450 2E1 (CYP2E1) Substrates | Garlic may increase the level of drugs metabolised through this pathway. |
| Isoniazid | Garlic may decrease the levels of this drug. |
| Sofosbuvir | Garlic may decrease the action of this drug. |
| Tacrolimus | Garlic may decrease the action of this drug. |
| Alkylating Agents | CoQ10 may reduce the effects of these drugs. |

| Interaction Severity | | |
|---|---|---|
| *Moderate* | Insulin | Chromium may increase the risk of hypoglycemia when taken with insulin. |
| | Levothyroxine | Chromium may decrease the absorption of Levothyroxine. Take HeartPro® at least 3 to 4 hours away from Levothyroxine. |
| | Phenobarbital | Folate may increase the risk of seizures when taken with this drug. |
| | Phenytoin | Folate may reduce the serum levels of this drug. |
| | Primidone | Folate may increase the risk of seizures when taken with this drug. |
| | Pyrimethamine | Folate has an antagonising effect with this drug. |
| | Cyclosporine | Ginger may decrease the levels of this drug. |
| | Metronidazole | Ginger may decrease the levels of this drug. |

*Drug-nutrient interactions have been taken from the Natural Medicines Database, October 2024. Please do your own due diligence before recommending this product to individuals taking medicines.*

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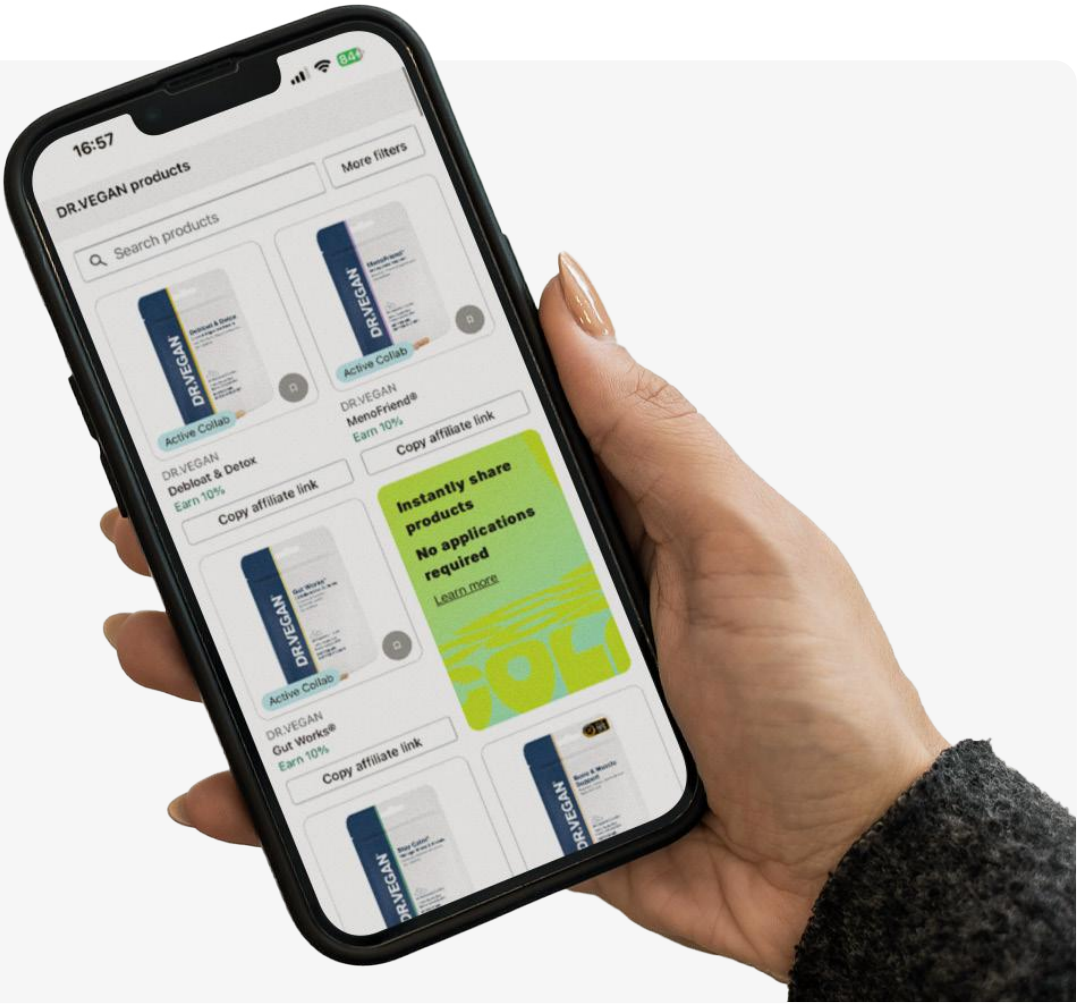


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