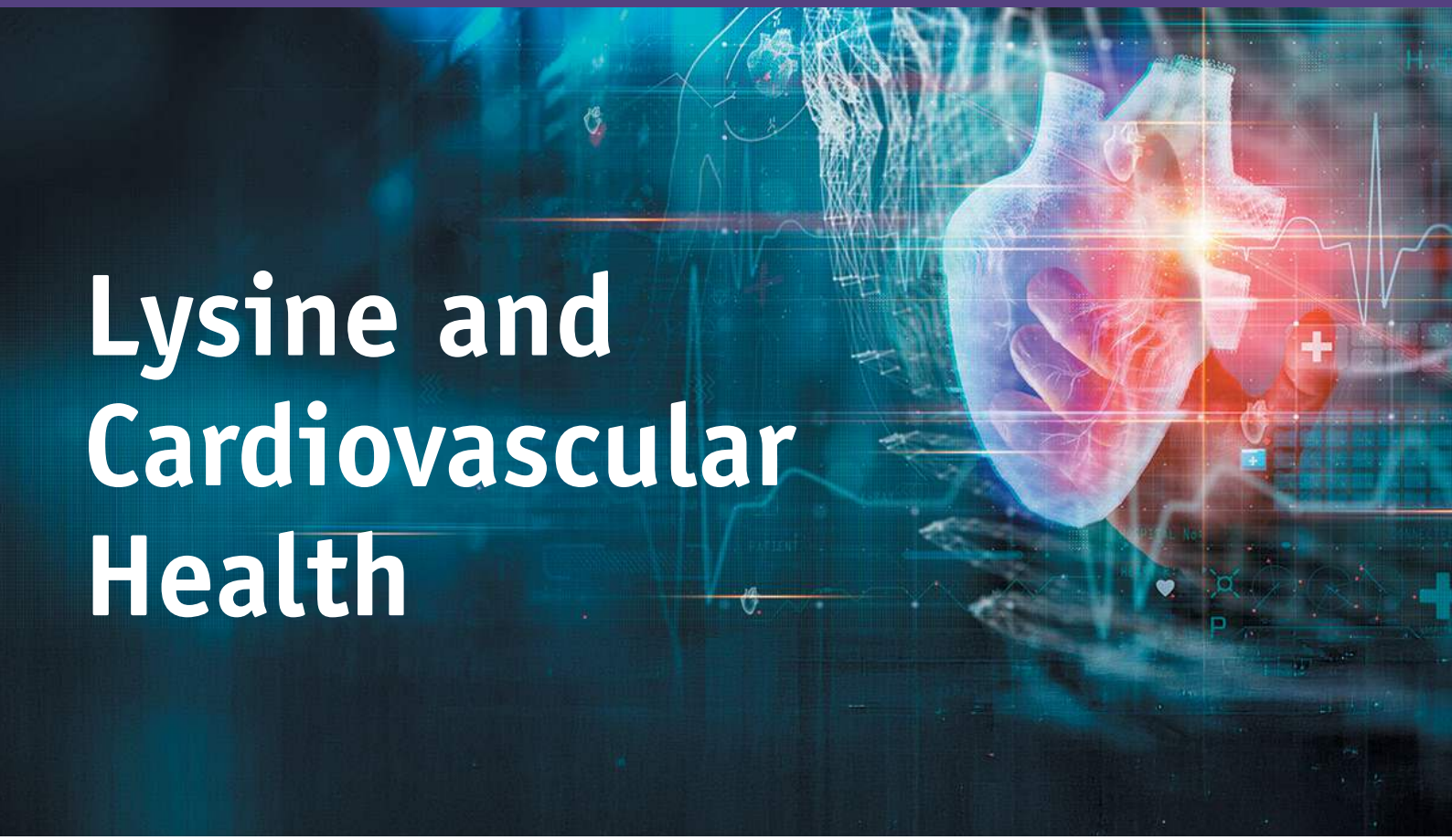

Lysine and Cardiovascular Health

Lysine is an essential amino acid – one of nine protein building blocks required for human health that we need to source from our diet because we don't produce them ourselves.[1] The best sources of essential amino acids are high protein foods, particularly meat, dairy and legumes and lysine is especially high in poultry, fish and seafood, pork, beef, soy products, eggs, seeds, beans and lentils.[2]

In its role as an essential amino acid, lysine is a key nutritional player in protein synthesis, enzyme and hormone production and building and maintaining muscle mass.[3]

Lysine also plays some specific roles in the immune system, including preventing the body from absorbing arginine which in turn makes it difficult for the herpes simplex virus (HSV-1) to proliferate and grow;[4] the reason for lysine supplements as a popular prevention and treatment strategy for cold sores.

But there's a lesser-known benefit of lysine and its impact on the heart and cardiovascular system is worthy of fresh consideration – its role in calcium metabolism appears to have a vital and direct effect on the health of the vascular system, especially the arteries.

The vascular system, also known as the circulatory system, is composed of various vessels that serve to carry blood and lymph throughout the body. The lymphatic vessels are responsible for lymph circulation, which removes toxins and waste from the body via filtration and drainage. Meanwhile, the veins, arteries and capillaries transport blood, which in turn moves both nutrients and oxygen to the tissues that need them.[5]

Just some of the nutrients carried through the arteries are minerals, including calcium. Whilst vital for a great many bodily functions, calcium can deposit and build up in the arteries, a process known as vascular calcification (VC). VC naturally increases with age and is also associated with kidney disease (which can cause calcium and phosphate imbalances) and diabetes (which can increase VC due to metabolic dysfunction). It also appears that inflammation, certain medications, genetic factors and vitamin D metabolism can influence VC.[6]

The most important aspect of VC to understand is that it directly increases the risk of stroke and heart attack because it reduces the elasticity of arteries, making them stiffer.[7] For this reason, it's associated with many cardiovascular diseases and disorders, including hypertension, aortic stenosis, cardiac hypertrophy, myocardial ischaemia, lower limb ischaemia, congestive heart failure and issues with the structural integrity of the cardiovascular system and heart.[8]

Where does lysine fit in?

In addition to its functions in the immune, metabolic and muscular systems, lysine plays an important role in regulating and metabolising calcium in the body, including the cardiovascular system, therefore helping to reduce VC. Animal studies have shown that administration of lysine prevents VC via several calcium related pathways, including improving the function of the parathyroid gland.[9] It appears that ample dietary or supplementary lysine may act as a nutritional assurance against excess arterial calcium deposits.

**References available on request.*