Canterbury Medical Research Foundation

Doctor Prisca Mbikou

The role of DWORF in Heart Disease

I started my studies in France at the University of Bordeaux where I graduated with a PhD in Sciences, Technology and Health, majoring in Cellular Biology and Pathophysiology. I have since worked at the Auckland University of Technology before joining the Christchurch Heart Institute (CHI).

The originality of this research project is that DWORF is an endogenous peptide which is highly expressed in the normal cardiac ventricle but down-regulated in a failing heart, strongly suggesting its involvement in cardiac function. To date very little is known regarding the role of this peptide in normal and pathological conditions. I hope to find answers to the fundamental question of DWORF's role in biology and cardiovascular pathology, which also has the potential to uncover a new therapeutic strategy for heart disease.

Heart failure often develops as the result of a blockage of the coronary arteries which causes myocardial injury and can lead to cardiac arrest. Over the past decades, medical research has developed invasive treatments (e.g. percutaneous transluminal coronary angioplasty and coronary bypass surgery) to restore a sufficient blood flow into the damaged heart area. This method can result in reperfusion injury which can cause further damage to the heart tissue. We have pharmacological therapies such as inotropes, that can make the heart beat stronger and can also increase myocardial oxygen consumption, causing ventricular arrhythmias and infarct expansion. This makes current treatments for heart attacks and heart failure less than ideal.

This research is based on a recent breakthrough in genetics revealing the existence of a newly discovered small protein, called DWORF. Preliminary studies indicate that DWORF plays a role in the development of heart disease and may have potential as a treatment for restoring the impaired function of a damaged heart impaired cardiac contractility in patients with heart failure.

The DWORF endogenous peptide is naturally produced by the body. As a possible future treatment, the levels of DWORF could be increased in patients with heart failure either by activating its gene expression or by direct administration of the purified protein itself, in the form of a pill or injection.

There are only two research laboratories in the world working on this newly discovered micropeptide, one of which is the Christchurch Heart Institute (CHI) in New Zealand.

This research is important because heart disease represents a significant healthcare issue and burden in New Zealand. Approximately 20% of the population will develop heart failure in their lifetime, with 30–40% of patients dying in the first year after diagnosis. Although there have been improvements in clinical management and outcomes over the years, mortality from heart failure remains high.

This research is aimed at health management. People with heart failure have permanently damaged hearts. With a successful research outcome it will not reverse the existing damage of the heart, but it will help a damaged heart function better.

I would not have been able to do this research without funding from the Canterbury Medical Research Foundation. Please continue to support the CMRF as medical research really does save lives.

Canterbury Medical Research Foundation

Research Saves Lives