

CFN Media Discusses Heart Failure and CBD Featuring Cardiol Therapeutics

Source: CFN Media Group

Heart Failure and CBD

Heart failure (HF) affects more than 6 million adults in Canada and the United States and is a leading cause of hospitalization, with costs exceeding \$30 billion each year in the US alone. People with HF suffer from shortness of breath, rapid heart rate, edema, reduced exercise capacity, often struggle with simple daily activities, and are frequently hospitalized. For many, these symptoms significantly reduce the quality of life.

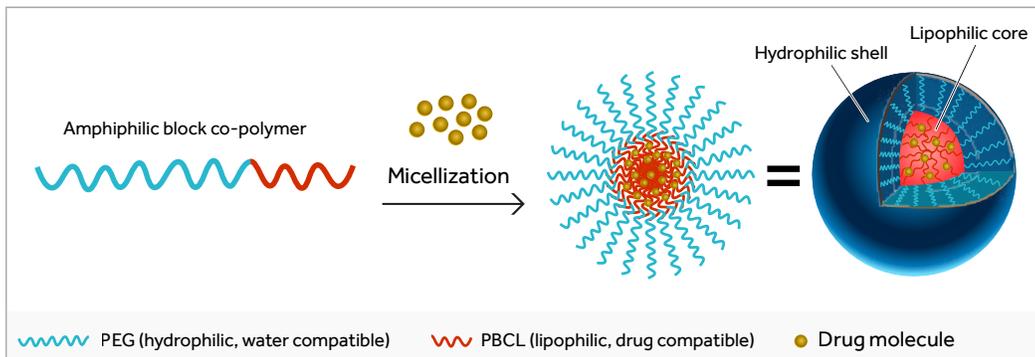
There are two main types of HF: heart failure with poor contraction or reduced ejection fraction (HFrEF), also known as systolic heart failure, and heart failure with poor relaxation or preserved ejection fraction (HFpEF), also known as diastolic heart failure. About half of HF patients suffer from HFpEF. Unfortunately, treatment for HFpEF has not advanced over the last couple of decades, with the standard of care currently involving the use of diuretics such as Lasix to relieve swelling of the tissue by removing water and salt. Diuretics do improve symptoms but there is a **lack of data** indicating that diuretics are actually effective in the treatment of the causes of HF.

There is, however, **considerable research** indicating that cannabidiol, or CBD, has potent anti-inflammatory and anti-fibrotic properties that could prove beneficial for treating HFpEF. Derived from the hemp or cannabis plant, CBD is getting a lot of attention as researchers are finally able to legally study the molecule. One issue with CBD lies with its delivery, due to CBD's hydrophobic nature. If taken orally, the liver removes much of the CBD before it enters the bloodstream, with the result that most current treatments involve very high and imprecise dosing.

Cardiol Therapeutics (TSX: CRDL) (OTC: CRTPF) is a biotech company with a strong background in heart therapy research, a proven and patented nanotechnology solution for the targeted delivery of CBD and other lipophilic drugs to inflamed tissues, and a supplier of ultra-pure pharmaceutical CBD to further its research into the treatment of HFpEF. Cardiol is also advancing an immunotherapeutic for the treatment of glioblastoma multiforme (GBM), the deadly brain cancer that took the lives of Senators Ted Kennedy and John McCain. The company believes a combination of cannabinoids and cell-based immunotherapies shows great promise in the treatment of GBM. The company will soon be launching its ultra-pure pharmaceutical CBD oil into the Canadian medical market to generate significant short-term revenue.

Nanotechnology Enables Targeted CBD Delivery

Cardiol has **developed a unique patented system** whereby lipophilic drugs (fat soluble) like CBD, are encased in a hydrophilic (water soluble) shell. This shell allows the active lipophilic ingredient to effectively circulate in the bloodstream. Normally, taking CBD orally results in less than 10% bioavailability, due to "first-pass" metabolism by the liver. Cardiol's nanotherapeutics delivery methodology, which avoids the oral route, allows for much higher levels of lipophilic active ingredients in the bloodstream and, most importantly,



has the potential to deliver drugs to specific sites of inflammation in the body. This proprietary technology could be licensed or partnered with other companies. Furthermore, the opportunity here is not just limited to CBD delivery, as these same problems have vexed companies developing other lipophilic drugs.

Illustration of Cardiol's patented nanotechnology

By utilizing this nanotechnology delivery system, Cardiol has found in an experimental model that its nanoparticles preferentially accumulate in inflamed heart tissue. These findings validate the platform's targeted delivery and point the way to further research through a clinical trial program.

Cardiol is collaborating with researchers and opinion leaders at international centers of excellence to leverage multidisciplinary expertise in drug delivery, drug formulation, nanotherapeutics, cardiac physiology, and heart failure to advance its clinical programs. The company's nanotechnology is developed in conjunction with the National Institute for Nanotechnology, a joint venture of the University of Alberta, the National Research Council of Canada, and the Government of Alberta.

The company is also collaborating with the DeBakey Heart & Vascular Center in Houston, one of the leading heart hospitals in the United States, to investigate its nanotechnology as it relates directly to the treatment of heart failure.

The company has partnered with TecSalud del Tecnológico de Monterrey ("TecSalud") in Mexico on a US\$3 million R&D program. TecSalud has collaborative relationships with the DeBakey Heart & Vascular Center and the Massachusetts Institute of Technology for its nanotechnology programs.

Overall, Cardiol is collaborating with some of the world's best heart and nanotech research organizations to develop its diverse product pipeline.

Experienced Team

Cardiol's President and CEO, David Elsley, previously founded Vasogen Inc. in the 1990s. Vasogen was a biotech company focused on treating heart conditions and inflammatory disease, and under Mr. Elsley's watch, it went public on the NASDAQ and the TSX, reaching a market capitalization north of US\$1 billion. His experience in founding and growing a company from start-up through clinical trials is essential as he guides Cardiol Therapeutics through a similar growth process.

He is joined by many other proven industry leaders, including the company's Chief Medical Officer, Dr. Eldon Smith. Dr. Smith is the former Head of Cardiology and Dean of Medicine at the University of Calgary. He also spent 14 years as Editor-in-Chief of the Canadian Journal of Cardiology. Dr. Smith has served on a wide variety of medical societies and associations, both in the private and public sector. He also brings a wealth of public company experience to Cardiol, having served as Director of more than ten public companies.

Collectively, Cardiol's executive team has extensive scientific, regulatory, and public company experience. This leadership is essential to the company's development and potential for success, as it navigates the complexities of bringing HF drug candidates through the clinical trial process to potential commercialization.

2019 a Pivotal Year for Cardiol

After going public with an IPO on the Toronto Stock Exchange on December 20, 2018, Cardiol Therapeutics is looking forward to an eventful 2019. The company is **introducing** ultra-pure pharmaceutical CBD to a Canadian medical market that is currently experiencing a major supply shortfall following the full legalization of cannabis. Cardiol views this as a significant revenue opportunity, and it serves as a major differentiator when compared to other biotech companies exclusively involved in clinical research. In lockstep, Cardiol expects to advance its **product pipeline**, specifically, its CBD-based HF treatment.

There is great upside potential for Cardiol as the company advances its therapies for the treatment of HF. Concurrently, the company is advancing its immunotherapeutic for the treatment of GBM, the most frequent and deadliest form of cancer affecting the brain. Treatments in the US for GBM are eligible for orphan drug status, meaning clinical research is subject to Fast Track review, with the intent of getting successful treatments to market as quickly as possible.

There are several potential milestones and catalysts for CRDL over the coming months. Combining the proven value creation of biotech drug development with the explosive potential of cannabinoid-based therapies, while targeting an enormous heart failure market, Cardiol Therapeutics is well positioned for significant growth.

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