Summary

Quincy Bioscience is a biotechnology company whose mission is to fight health challenges that result from neuronal calcium imbalance. Quincy Bioscience began in 2004 with the development of proprietary calcium-binding protein technology based on a protein called “apoaequorin” originally discovered in a certain species of jellyfish.

Extensive research has described an important role for unregulated calcium levels in the etiology of cognitive declines seen in aging individuals. One suggestion for the disruption of calcium homeostasis is decreased levels of calcium binding proteins (CaBPs). Preclinical studies at the University of Wisconsin-Milwaukee demonstrated that following addition of apoaequorin, 50% more brain cells survived in a model of ischemic stroke. Quincy Bioscience developed Prevagen® and Prevagen Professional™, brand brain health supplements, containing the active ingredient apoaequorin, for brain cell protection. Human studies demonstrated Prevagen® improved memory for those reporting memory difficulties over the course of three months.

Company Profile

Quincy Bioscience, located in the University Research Park in Madison Wisconsin, was established in 2004 and is focused on the discovery, development and commercialization of novel approaches to the challenges associated with aging and calcium dysregulation.

Quincy Bioscience has partnered with academic research laboratories in areas of scientific or commercial interest, related to calcium homeostasis. Quincy Bioscience has a research relationship with the laboratory of James R. Moyer, Jr., Ph.D. of the University of Wisconsin-Milwaukee. Dr. Moyer is an expert in the field of calcium-mediated cellular death. Quincy Bioscience is dedicated to fighting the effects of calcium dysregulation on several fronts. In addition to the development of a novel dietary supplement, we are developing therapeutics from our calcium binding protein technology. Quincy Bioscience’s first product, Prevagen® brand dietary supplement, is now available in health food and chain drug stores nationwide.

Prevagen Professional™, twice the potency of Prevagen®, is offered exclusively to healthcare professionals for distribution to their patients. Prevagen® is the first dietary supplement to restore calcium-binding proteins and address the effects of aging.

Company Focus

Quincy Bioscience’s technology has led to patent filings for both nutraceutical and pharmaceutical applications of the calcium-binding protein apoaequorin.

While apoaequorin has been used in laboratory research for over forty years, it had never been examined for human therapeutic use prior to Quincy Bioscience’s research efforts. Apoaequorin is from a family of molecules called calcium-binding proteins (CaBPs).

Calcium-binding proteins are vital in regulation of calcium levels in certain cells types and become depleted during in the aging process. It is the company’s hypothesis that both cellular dysfunction and cellular death can be averted or ameliorated when intracellular calcium levels are better controlled. Management of calcium levels during or after acute or chronic insults to the cell can forestall the cytotoxic affects of excess calcium.

By assisting the body in the management of the intracellular calcium ions, problems associated with aging can be addressed, enhancing the quality of human life.
Calcium Regulation and Brain Health

Importance of intracellular calcium
Calcium is an essential second messenger that plays an important role in a variety of neuronal functions, including synaptic plasticity, activation of kinases and phosphatases, regulation of gene expression, and excitotoxic cell death (Williams and Johnston, 1989; Bröcher et al., 1992; Uchitel et al., 1992; Choi, 1994; Yeckel et al., 1999). The latter is particularly important because, while vital to normal neuronal function, calcium levels are tightly regulated and excess calcium is harmful. Unregulated calcium influx is particularly troublesome for aging neurons because they are less able to handle excessive calcium, in part, due to decreases in expression of calcium binding proteins, which help to buffer intra-cellular calcium.

Calcium Hypothesis of Aging
Over the last fifteen years, a hypothesis has emerged which attempts to explain the cognitive deficits seen in aging populations. The calcium hypothesis of aging (Khachaturian, 1987; Landfield, 1987; Khachaturian, 1994) posits that dysregulation of calcium homeostasis is a primary factor contributing to age-related learning and memory impairments observed in many species, including humans. In healthy people, the levels of calcium ions are well controlled. However, in aging, the body gradually loses its ability to manage the levels of calcium ions (Squier et al., 2000).

There is a loss of calcium homeostasis and the unregulated calcium levels begin to wreak havoc on neuronal tissue. Eventually, elevated calcium triggers excitotoxic events that will kill the neurons. Currently, there are no approaches that address the problem of excess calcium ions (Ripova et al., 2004).

Relevance of Calcium Binding Proteins
Calcium-binding proteins (CaBPs) are recognized as protective factors in susceptible neuronal populations. CaBPs are important for regulating the intracellular calcium concentration of neurons (Baimbridge et al., 1992). Studies have shown that neurons lacking CaBPs are less able to handle ionic insults (Mattson et al., 1991).

A number of studies suggest that there is a selective decrease in certain CaBPs in the brains of aged animals, including humans (Ichimiya et al., 1988; Iacopino and Christakos, 1990; Hof and Morrison, 1991; Amenta et al., 1994; Selden et al., 1994; Villa et al., 1994; De Jong et al., 1996; Zettel et al., 1997; Moyer et al., 2001). Loss of CaBPs with advancing age may leave populations of neurons vulnerable to insults that result in even moderate increases in intracellular calcium concentrations.

The jellyfish-derived protein "apoaequorin" is from the EF-hand family of calcium-binding proteins and is similar in DNA sequence to CaBPs expressed in human neurons.

Prevagen Brands

**Prevagen Professional™** was developed exclusively for Healthcare Practitioners and their patients. Prevagen Professional™ is a patent-pending brain health supplement designed to fight aging and replenish the calcium-binding proteins lost in the natural aging process. Prevagen Professional™ has twice the potency of consumer strength Prevagen®,.

**Prevagen®** is a patent-pending dietary supplement designed to fight aging and replenish the calcium-binding proteins you lose in the natural aging process. Prevagen® is the only dietary supplement to use the age-fighting proteins contained within the jellyfish. Prevagen® is formulated for the retail consumer market.**

For wholesale orders call: 888-895-MIND (6463)

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Patent Pending
Prevagen® Research

Apoaequorin increases cell survival

In repeated preclinical studies conducted at the University of Wisconsin-Milwaukee apoaequorin prevented cell death as shown in these slides. Utilizing an established model of ischemic insult to assess neuroprotection, a significantly greater number of untreated nerve cells died compared to the apoaequorin treated cells. Dead cells from brain slices are shown stained trypan blue.

Apoaequorin neuroprotection increases with age

Models of ischemic insult are used to establish a compound’s neuroprotective ability due to the close biochemical similarities between an ischemic insult and neurodegeneration over time.

In additional studies when comparing the neuroprotective effect of apoaequorin in adult versus aged subjects, 55% more neurons survived in the aged subjects compared to approximately 30% in the younger group. The amount of protective calcium-binding proteins expressed by neurons diminish with age. This data shows that apoaequorin has a greater neuroprotective effect in aging.

Prevagen® helps memory

The Prevagen® Quality of Life Study was an open-label study of 56 generally healthy participants over a 90 day period measuring changes in overall cognition, quality of sleep, energy, mood, pain, and general health. Changes in performance were measured via a standardized battery of questions. The results of the study showed improvement across all parameters.

Prevagen® provides a clear benefit in the area of memory especially for those who reported having poor memory at Day 0 (baseline) of the trial. No participants discontinued the study due to an adverse event. The two graphs illustrate questions from the memory portion of the study where participants reported a decrease in overall forgetfulness and a reduction in the amount of reminders needed to complete tasks as a part of their daily life.

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Aequorin (apoaequorin) Research

Aequorin is a naturally occurring substance; discovered in 1962 in a species of jellyfish in the Puget Sound, WA.

References


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