

AD4 for treatment for oxidative stress related diseases (Yissum)

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Novel approach using low molecular weight antioxidants

Categories	CNS, Cardiovascular, Inflammation, NAC-amide (AD4)
Development Stage	Successful toxicology studies completed for AD4
Patent Status	Patents filed in Australia and United States.
Market	Sales of neurodegenerative drugs reached \$18.5 billion in 2009 and are expected to increase 62 per cent to \$29.7 billion by 2012.

Highlights

- The World Health Organisation predicts that by 2040, as a result of a growing ageing population, neurodegenerative diseases (NDDs) will have overtaken cancer to become the world's second leading cause of death, after cardiovascular disease. However, governments and industry have yet to make a major commitment to treating NDDs.
- Maintaining the balance of oxidants/antioxidants determines the redox-state in the body. Lowering oxidative stress appears to be a valid approach for treating redox related diseases including neurodegenerative diseases, asthma, and other chronic obstructive pulmonary diseases (COPD).
- Current reducing reagents, such as vitamin E, vitamin C, or N-acetylcysteine (NAC), are unable to cross the blood brain barrier (BBB).
- This new compound, AD4, is capable of crossing the blood brain barrier.
- Successful toxicology studies have been carried out by the well-known clinical research organization, Quintiles.
- Studies have been carried out and describe its efficiency in animal models of Parkinson's, MS, haloperidol toxicity, macular degeneration, asthma, beta-thalassemia, and others.

Our Innovation

Low molecular weight reducing compounds that are able to cross the blood brain barrier (BBB) and provide treatment for neurodegenerative diseases (Parkinson's, Alzheimer's), diabetes-related disorders, and ischemic head injuries by the relief of oxidative stress

Key Features

- Unlike all previous drugs, such as NAC that is impermeable or vitamin E that remains in the membrane, the new compound can penetrate the cell membrane and be targeted into the cell.
- AD4 is very active, is water soluble, and crosses the blood brain barrier.
- AD4 is not toxic (up to 2gr/kg) because it is derived from natural amino acid.
- It is significantly (>10-fold) more potent than NAC.
- Results of animal trials for macular degeneration (AMD), asthma, Parkinson's, and multiple sclerosis are very successful and promising.
- Toxicology studies for AD4 have been completed.

Development Milestones

- Seeking funding for Phase I clinical studies and ongoing research, and industrial collaboration.
- The laboratory holds enough of the compound for immediate use in testing any experimental model.

The Opportunity

- Nervous system neurodegenerative disorders including Parkinson's and Alzheimer's diseases as well as diabetes
- Conditions of the peripheral tissues, such as acute respiratory distress syndrome, amyotrophic lateral sclerosis, and atherosclerotic cardiovascular disease.

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