# Alzheimer's Disease: Cannabis Formulation Shows Promise

September 12, 2017

NetworkNewsWire Editorial Coverage: Known as America's most expensive disease, with an estimated cost to the U.S. economy of $236 billion in 2016, Alzheimer's disease (AD) affects more than 5.3 million Americans. Over the next 20 years, the number of those afflicted with the disease is expected to double. The forecast is staggering, considering that no effective cure has been found, but the quest for one continues, with **India Globalization Capital, Inc. (NYSE: IGC) (**IGC Profile**), Anavex Life Sciences (NASDAQ: AVXL), Axovant Sciences (NYSE: AXON), AC Immune Ltd. (NASDAQ: ACIU)** and **Biogen, Inc. (NASDAQ: BIIB)** all exploring a variety of approaches to uncover the pathological pathways of this chronic neurodegenerative disease.

It is believed that Alzheimer's disease is caused by two types of legions in the cerebral cortex and hippocampus: senile plaque composed of the protein beta-amyloid (Aβ plaque), and neurofibrillary tangle, composed of highly phosphorylated Tau protein. The surface of neurons has a protein called APP that is sectioned by enzymes to free up the Aβ protein that is then cleared by the body. In Alzheimer's patients, however, there is an imbalance whereby Aβ protein is not regulated and builds up abnormally into insoluble fibroles, creating senile plaques.

Currently, **India Globalization Capital (IGC)** is the only publicly traded pharmaceutical cannabis stock that addresses Alzheimer's disease, which positions the company with a first-mover advantage in phytocannabinoid-based combination therapy (http://nnw.fm/0QDQz).

The company's drug candidate, IGC-ADI, works through a molecular pathway that allows low doses of tetrahydrocannabinol (THC) to 1) inhibit Aβ protein production, 2) inhibit Aβ protein aggregation, 3) reduce protein phosphorylation, 4) potentially restore mitochondria function, and 5) potentially redirect the immune system.

IGC's evidence supporting this theory is based on two studies done on tissue and mice at the University of South Florida (USF). The USF study found 1) THC to be effective at lowering Aβ levels in N2a/AβPPswe cells at extremely low concentrations in a dose-dependent manner over a 48-hour period; 2) that THC directly interacts with Aβ protein, thereby inhibiting aggregation; 3) that THC was effective at lowering both total GSK-3β levels and phosphorylated GSK-3β in a dose-dependent manner

at low concentrations; and 4) that low doses of THC can increase mitochondria function. These studies led to the filing of a patent by USF entitled, "THC as a Potential Therapeutic Agent for Alzheimer's Disease." IGC acquired the exclusive right to this patent filing and expects to advance the technology and IGC-AD1 through medical trials.

The theory is further supported by a study conducted by researchers at the Salk Institute of Biological Studies, who drew similar conclusions. In June 2016, the Institute, in a news release (http://nnw.fm/E5Ecm) headlined "Cannabinoids remove plaque-forming Alzheimer's proteins from brain cells," revealed that its scientists had found preliminary evidence "*that tetrahydrocannabinol (THC) and other compounds found in marijuana can promote the cellular removal of amyloid beta, a toxic protein associated with Alzheimer's disease*."

A look at other approaches in the market emphasize the unique position occupied by IGC, as well as the exciting potential of ongoing research. **Anavex Life Sciences (AVXL)**, for example, is focused on research aimed at treating more than just the symptoms of Alzheimer's. The company's lead candidate, Anavex 2-73, recently completed a phase 2a trial in patients with mild to moderate Alzheimer's disease, showing a favorable safety and bioavailability profile and dose response curve. Early preclinical studies generated a great deal of excitement, because they indicated that Anavex 2-73 could potentially halt or reverse the course of Alzheimer's disease through restoration of the body's homeostasis, according to a report (http://nnw.fm/uN7LN).

At **Axovant Sciences (AXON)**, an air of expectation is mounting as the company anxiously awaits the outcome of a phase 3 trial, started in 2015, for its lead Alzheimer's candidate, intepirdine. Results are expected by the end of September 2017. Axovant's drug works in conjunction with another Alzheimer's drug currently in use, donepezil, and acts on the 5HT6 receptor as an antagonist. While donepezil inhibits the loss of acetylcholine, a chemical in the brain that transmits signals, intepirdine appears to increase the production of that vital medium.

In August, **AC Immune** (**ACIU**) announced the discovery of new antibodies that target biomarkers other than Aβ and tau. A news release (http://nnw.fm/WA9xS) reports that "These next-generation antibodies were discovered using the company's proprietary SupraAntigen™ platform, which has already generated four products in clinical development, including crenezumab partnered with Genentech/Roche in Phase 3 for Alzheimer's."

**Biogen (BIIB)** has also joined the quest for an Alzheimer's elixir. Its experimental drug to treat the condition, aducanumab, is now in pivotal trials. The company's valuation soared by more than a billion dollars after analysts at Goldman Sachs (NYSE: GS) added it to their Equity Conviction List, according to the Boston Business Journal (http://nnw.fm/HlL7E).

These efforts to defeat Alzheimer's are fueled by compelling incentives. Some 5.5 million Americans suffer from the malady, which kills more than breast cancer and prostate cancer combined. The market potential of a remedy has been estimated at over $5 billion, putting IGC at a sweet spot in the conjecture of the medicinal applications of THC and disease treatment.

For more information on India Globalization Capital, please visit: India Globalization Capital (IGC) or http://www.igcinc.us