

Protecting neurons could halt Alzheimer's, Parkinson's diseases

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Researchers at Southern Methodist University (SMU) and The University of Texas at Dallas (UTD) have identified a group of chemical compounds that slow the degeneration of neurons, a condition behind old-age diseases like Alzheimer's, Parkinson's and amyotrophic lateral sclerosis (ALS).

Their findings are featured in the November 2008 edition of *Experimental Biology and Medicine*. SMU Chemistry Professor Edward R. Biehl and UTD Biology Professor Santosh D'Mello teamed to test 45 chemical compounds. Four were found to be the most potent protectors of neurons, the cells that are core components of the human brain, spinal cord and peripheral nerves.

The most common cause of neurodegenerative disease is aging. Current medications only alleviate the symptoms but do not affect the underlying cause – degeneration of neurons. The identification of compounds that inhibit neuronal death is of urgent and critical importance.

The synthesized chemicals identified by Biehl and D'Mello, called "3-substituted indolin-2-one compounds" are derivatives of another compound called GW5074 which was shown to prevent neurodegeneration in a past report published by the D'Mello lab. While effective at protecting neurons from decay or death, GW5074 is toxic to cells at slightly elevated doses, which makes it unsuitable for clinical testing in patients.

The newly identified, second generation compounds maintain the protective feature of GW5074 but are not toxic – even at very high doses – and hold promise in halting the steady march of neurodegenerative diseases like Alzheimer's and Parkinson's.

"Sadly, neurodegenerative diseases are a challenge for our elderly population," D'Mello said. "People are living longer and are more impacted by diseases like Alzheimer's, Parkinson's and Amyotrophic Lateral Sclerosis (ALS) than ever before — which means we need to aggressively look for drugs that treat diseases. But most exciting now are our efforts to stop the effects of brain disease right in its tracks. Although the newly discovered compounds have only been tested in cultured neurons and mice, they do offer hope."

Source: Southern Methodist University

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