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Pharmaceutical Based Recovery of Function In Chronic Spinal Cord Injury

Chemical analogues and derivatives of 4-aminopyridine with superior pharmacological properties have been developed to improve nerve impulse conduction and clinical treatment efficacy for chronic spinal cord injury.

In the United States, there are between 240,000 to 337,000 people chronically injured with severe behavioral loss from spinal cord damage, with approximately 12,500 new cases each year. There is currently no treatment that can recover functions for those affected. Previously, researchers at Purdue University's Center for Paralysis Research have shown 4-aminopyridine (4-AP) to be clinically effective in treating chronic spinal cord injury in both dog and man; the compound is now in phase II human clinical tests.

Purdue University researchers have developed chemical analogues of 4-AP with superior pharmacological properties compared to the parent compound. Special analogues and cocrystals of the compound 4-AP were synthesized and their biological properties were tested. These compounds and all related derivatives and prodrugs dissolve readily at stomach pH facilitating the distribution of the parent compound and the analogues through the body subsequent to oral intake. These drugs (under stomach pH) have been shown to improve nerve impulse conduction through injured spinal cords in in vitro experimental models.

Advantages:

-More effective than 4-AP

-Long-term stability

-Slow dissolution

-Facilitates ease of clinical administration

Potential Applications:

-Medical/Healthcare

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Pharmaceuticals/Drug Discovery & Development

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Intellectual Property:

Provisional-Patent, 2002-12-06, United States | NATL-Patent, 2003-12-05, China | NATL-Patent, 2003-12-05, India | NATL-Patent, 2003-12-05, Japan | EP-Patent, 2003-12-05, United Kingdom | EP-Patent, 2003-12-05, France | EP-Patent, 2003-12-05, Germany | EP-Patent, 2003-12-05, Ireland | Utility Patent, 2003-12-05, United States | NATL-Patent, 2003-12-05, European Patent | PCT-Patent, 2003-12-05, WO | NATL-Patent, 2003-12-05, Canada | NATL-Patent, 2003-12-05, Australia | NATL-Patent, 2003-12-05, New Zealand | Provisional-Patent, 2005-05-11, United States | DIV-Patent, 2007-07-16, United States | PCT-Patent, N/A, WO

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