(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :18/08/2023

(21) Application No.202341055613 A
(43) Publication Date : 01/09/2023

(54) Title of the invention : NMDA receptors antagonist from natural sources for Parkinson disease

(51) International classification :A61P0025000000, A61P0025160000, A61P0043000000, A61P0025280000, A61K0045060000
(86) International Application No :PCT//
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
1. A method for isolating and characterizing N-methyl-D-aspartate (NMDA) receptor antagonists derived from natural sources, wherein said antagonists are efficacious in the treatment or management of Parkinson's disease (PD). 2. The method of claim 1, wherein the natural source is selected from the group consisting of plants, fungi, marine organisms, and combinations thereof. 3. The NMDA receptor antagonist as isolated and characterized in claim 1, wherein the antagonist demonstrates superior selectivity towards NMDA receptors compared to other glutamate receptor subtypes. 4. A pharmaceutical composition comprising an effective amount of the NMDA receptor antagonist as claimed in claim 3, and pharmaceutically acceptable excipients, formulated for oral, transdermal, intranasal, intravenous, or intramuscular administration. 5. The method of claim 1, wherein the isolation and characterization process leverages advanced analytical techniques, selected from the group consisting of mass spectrometry, nuclear magnetic resonance (NMR) spectroscopy, and chromatography. 6. The method of claim 1, wherein the identified NMDA receptor antagonist demonstrates a superior safety profile, characterized by reduced off-target effects and minimal adverse reactions when compared to synthetic counterparts. 7. A method for treating or managing Parkinson's disease in a subject, comprising administering to the subject an effective amount of the NMDA receptor antagonist as described in claim 3. 8. The method of claim 7, wherein the administration of the NMDA receptor antagonist results in notable improvements in both motor and non-motor symptoms associated with Parkinson's disease. 9. The pharmaceutical composition of claim 4, wherein the formulation is further combined with other neuroprotective agents, dopamine agonists, or agents that target other neurotransmitter systems, to provide synergistic therapeutic effects. 10. A use of the NMDA receptor antagonist as described in claim 3, in the preparation of a medicament specifically formulated for delaying the progression or onset of neurodegenerative changes associated with Parkinson's disease.

No. of Pages : 17 No. of Claims : 10