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Poster Presentation

Small Molecules as Chemical and Pharmacological Tools for Neuroinflammatory Diseases Treatment (with Emphasis on Multiple Sclerosis)

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Abstract

Multiple Sclerosis (MS) is a neuroinflammatory disease resulting in degeneration of the myelin sheaths and death of oligodendrocytes. So far, several strategies have been introduced to control the disease. Treatment with small molecules is one of the strategies that have recently attracted the attention in the scientific community. These molecules that target epigenetic and other cellular processes offer powerful tools for disease treatment from several ways including modification of cell function by inhibition/activation of specific proteins and also reprogramming somatic cells and manipulating their fate to a desired cell type. This process ultimately leads to demyelination cessation and remyelination stimulation. Studies show that specific small molecules such as Src family kinase inhibitor PP2, and Chir99021 chemically have been effective in modulating disease progression and also its treatment. There are several studies that have reported successful efforts of using these molecules for MS control and treatment. In this article the authors will review recent studies that have been published in this research area. We have searched the PubMed databases comprehensively and accurately to find peer reviewed articles with Small molecule and multiple sclerosis keywords. We studied them carefully and selected the most prestigious and the most recent of them to ensure that all knowledge on this topic is discussed. Also we put meeting abstracts under precise consideration to ensure that all references have been investigated. In this review we emphasized on the great opportunity of using small molecules for MS control and treatment. There are several studies that have used small molecules to inhibit demyelination and induce remyelination that indicates the growing attention to this research area. Nevertheless, there are several challenges in using these cells for treating MS but we hope that efforts of this growing research community will completely solve all the problems and someday this therapeutic approach will take a great step in neuroinflammatory disease treatment.

Keywords: Neuroinflammatory, Multiple Sclerosis, Small Molecules

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