

Editorial

Recent Advances towards the Treatment of Depressive Disorders

Abstract: Depressive disorders affect more than 300 million people all over the world and 16% of US population. Depression is also the leading cause of disability worldwide and a major contributor to the overall global burden of disease. The first antidepressant was approved in the 1950s. In 2013, antidepressants became the most commonly prescribed drugs in the United States. However, the diagnosis and treatment of depression is changing since depression is a rather heterogeneous disorder with various co-occurring symptoms and divergent responses to treatment. In this theme issue, we brought together 12 papers written by the leading scientists from all over the world. The special issue was divided into 4 sections. The first set of papers explored topics in the precision medicine of depression. The next section was about the application of pharmacometabolomics on the discovery and development of new antidepressants. In the third section, we had a series of papers focusing on the status of current and future antidepressants. The final section described the alternative therapy for depression. This theme issue added our understanding of the diagnosis and treatment of depressive disorders.

Keywords: Depression, neuroimaging, antidepressants, metabolomics, fast-onset, medicinal plants, nutrition, Ayurveda

PRECISION MEDICINE IN DEPRESSION

Precision medicine, the capacity to really tailor treatments to specific populations and individuals, is a novel approach for the treatment of depression. The effective treatment would only be achieved through the diagnosis and precise classification of depression subtypes. Magnetic Resonance Imaging (MRI) is an especially useful modality for depressive disorders due to its high resolution for soft tissues such as the brain. In the first 2 papers of this theme issue, Song, *et al.* [1] and Qiu, *et al.* [2] reviewed the recent advances for the diagnosis of depression and the evaluation of treatment response using MRI. The selection of antidepressant choices relies on the development of new techniques for measuring antidepressants. Mansour *et al.* [13] developed a simple, fast and sensitive method to determine venlafaxine in biological fluids and pharmaceutical formulations using just a pH meter and ion-selective electrodes.

PHARMACOMETABOLOMICS IN THE DEVELOPMENT OF NEW ANTIDEPRESSANTS

Pharmacometabolomics aims to assess the metabolic effects of the pharmaceutical treatment. With the technical advances in analytical instruments, metabolomics is entering into a “new generation”. Jian, *et al.* [3] summarized the broad applications of Next-Generation Metabolomics (NGM) in facilitating the discovery and development of antidepressants. Albiflorin was used as an example to illustrate how NGM improves our understanding of drug candidate actions and facilitates drug safety evaluation.

CURRENT AND FUTURE ANTIDEPRESSANTS

Pharmacotherapy is the main treatment approach for depression. Antidepressants have become the most prescribed drugs in the U.S. Amidfar and Kim reported the selective agonists and antagonists of 5-HT receptors in the treatment of major depression [4]. Sleep disorders are the core symptoms of depression. Satyanarayanan, *et al.* reviewed the pharmacologic interventions targeting on circadian rhythm and melatonin receptors [5]. The majority of current antidepressants are limited by their slow action. The conventional antidepressants can take as long as six weeks to have an effect. Potentially safe and fast-acting interventions would be invaluable. Jeff, *et al.* [6] and Kuo, *et al.* [7] discussed the molecular mechanisms of the promising fast-onset antidepressants. Depression is the most common neuropsychiatric illness associated with Parkinson disease (PD). Kabra and the co-authors reviewed the emerging and alternative therapies for the treatment of depressive patients with PD [8].

ALTERNATIVE THERAPY FOR DEPRESSION

The current synthetic antidepressant drugs have limited efficacy and might undesirable side effects. Dietary improvement may provide an efficacious and accessible treatment strategy for depression. Xu, *et al.* [9] summarized the recent advances in nutrition for the treatment of depressive disorder. The use of complementary therapies is gaining popularity. Le, *et al.* [10] highlighted the psychotherapy of cancer patients with the secondary depressive disorder. Indian Ayurveda is one of the most ancient medicine in the world. Sharma and the co-authors [11] reviewed the herbal and holistic solutions of Ayurveda for depression. Ismail, *et al.* [12] described some important medicinal plants and their reported active constituents with antidepressant activity.

This special issue covers all the major aspects related to the diagnosis and treatment of depression. Both the guest editors and all the authors hope that the special issue will help the readers quickly grab the recent advances in this field. Moreover, the critical visions from the contributors in this special issue would motivate other scientists to develop more effective treatments for major depressive disorders in the future.

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