**ABSTRACT**

Neurological disorders are one of the most common disorders among humans, with one in three people around the world being affected at some point in their lives. Alzheimer’s, Parkinson’s, and multiple sclerosis are the most common examples heard. As there is no certain cure, it is critical to continue and deepen research. In the initial days, scientists believed that the main reason for neurological disorders is due to the modification of genes and somatic changes. As more information about neural networks and their associated diseases became available, a new discovery emerged: Changes in gene expression are not always caused by changes in the genetic sequence. Epigenetic modifications play a huge role in maintaining the homeostasis of the cell by activating and deactivating certain gene mechanisms. This action might be beneficial to the body or might create increased harm. Changes in DNA methylation, histone modifications, or altered microRNA expression patterns are examples of epigenetic changes. These changes are known to be related and to play a significant role in neurological disorders and the failure of conventional treatment. Diet and lifestyle have a big impact on epigenetic alterations. In this regard, dietary phytochemicals taken as dietary supplements have shown promise in reversing these epigenetic changes, controlling the expression of genes and cellular targets, and thus preventing age-related disorders via altering the epigenome. One of the most common issues leading to an increase in neurological disorders is oxidative stress. Phytochemicals have antioxidant properties, which help in reducing oxidative stress and decreasing the chance of the occurrence of neurological disorders. This chapter talks about neurological diseases, their epigenetic mechanisms, and the epigenetic modifications of the phytochemicals used to treat them.