



Neuroprotective Effect of Herbal Medicine

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DESCRIPTION

Pharmacognosy is the study of herbal medicine and their use in treatment of different diseases. Plants-based medical treatments have played a vital part in human history, and still, traditional medicine is practiced in various parts of the world. Recently, archaeologists had reported that plants were used for medicinal purposes since the Palaeolithic age, nearly 60,000 years before. Moreover, the written evidence of plant-based medicine usage was recorded since the Sumerians period, which is nearly 5,000 years before. The different ancient cultures have recorded different traditional plants and their medical properties. For example, in ancient Egyptian medicine, different herbs and their medical properties were recorded in medical papyri. Some of the records were preserved since 1550 BC and they have covered more than 700 different plants derived compounds. Besides, ancient Indian traditional medicine also uses different parts of plants and still many traditional practitioners believed that principal treatment of diseases is balancing the diet.

There are many plants derived medicinal compounds such as Ginseng, resveratrol, *Ginkgo biloba*, and curcumin have been used to treat or prevent different neurological diseases and reportedly relieve many symptoms associated with neurological diseases in different animal models. However, the underlying molecular and cellular mechanisms involved in the health-protective effects of herbal medicine are not explored completely. Since every symptom associated with neurological disease patients are due to disrupted underlying molecular and cellular mechanisms of neuroendocrine systems. It is very important to explore the detailed mechanism involved the neuro degeneration and try to aid its function properly through supplementation of different herbal drugs rather than block the symptoms as synthetic and modern medication do. The different pharmacological activities of medicinal plants are solely determined by their phytochemical constituents. Different plants

have their phytochemical constituents, but they are generally classified into two groups based on the role they play in the metabolism pathway. The primary metabolites of plants are included those basic functional units of cells such as amino acids, proteins, nucleic acids, and different intermediate products of cellular signaling pathways and they are similar in all living cells. The secondary metabolites of plants are intermediate products of different cellular signaling pathways such as shikimic acid pathways.

The medicinal properties of plants are aligned toward secondary metabolites of plants and even some of the ancient traditional medicine uses secondary metabolites of plants to treat different diseases. Moreover, in modern medicine, they are the leading compounds of medication for different diseases such as migraine, cancer, neurological disorders, etc. In the natural state, plants face various stresses and biotic disturbances which leads to the induction of stress and defense responses facilitated by signaling processes and pathways involving a repertoire of molecules to perform cellular functions essential for physiological processes.

CONCLUSION

These cellular processes in the defensive mechanisms of plants produce different bioactive compounds secondary metabolites. They are categorized based on their chemical structure such as Phenolic, Alkaloids, Saponins, Terpenes, Lipids and Carbohydrates. These chemicals are produced by the plant cell through various pathways involved in the plants metabolism of the primary metabolites and they act as defense mechanisms of plants. Secondary metabolites have pleiotropic health benefits including antioxidant, anti-inflammatory, anti-angiogenesis, anti-cancer and antibiotic. Due to these medical properties of secondary metabolites compounds, they are highly valued products and frequently used in modern medicines for the treatment of different stress-related neurological disorders.

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