Mini Review
Volume 11:7, 2022

Alternative and Integrative Medicine

ISSN: 2327-5162 Open Access

Using Organic Antioxidants to Treat Parkinson's Illness: A Review

Hasan Siddique*

Department of Zoology, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

Abstract

Parkinson's disease (PD) is a neurological condition that progresses over time. It happens as a result of dopaminergic neurons dying. Reactive oxygen species and complex I, which affects mitochondrial respiratory function, are two pathophysiological pathways for idiopathic Parkinson's disease. Therefore, using natural antioxidants in PD may offer a different kind of treatment that avoids oxidative stress and slows the evolution of the illness. This review compares and discusses the results of hydroxytyrosol, Ginkgo biloba, *Withania somnifera*, curcumin, green tea and *Hypericum perforatum* in PD animal and cell line models. In animal and cell models of PD, the antioxidants under evaluation have been shown to shield brain cells from oxidative damage. However, there is always room for improvement and further research about the therapeutic usefulness of these phytochemicals.

Keywords: Parkinson's disease • DNA • Glutamatergic agents

Introduction

Parkinson's disease (PD) is a chronic, progressive neurological condition that affects 1% of people over 65 and has an annual incidence rate of 4.5 to 19.0 per 100,000 people. Dopaminergic neurons that generate dopamine in the substantia nigra of the midbrain are the main cause of PD [1]. As a result of the failure of protein breakdown processes like the lysosomal system, it is also characterised by the buildup of protein aggregates, primarily composed of -synuclein.

Description

Increased microglial activity, which can lead to the overexpression of pro-inflammatory cytokines and reactive oxygen species, is linked to dopaminergic neurons failing (ROS). Further data points to the possibility that ROS levels may be elevated by the malfunctioning of Complex I, an enzyme complex located in the mitochondria's inner membrane. ROS build-up causes oxidative stress in cells, which can develop to inflammation and tissue damage. PD has been linked to these mitochondrial abnormalities brought on by oxidative stress in animal studies.

Furthermore, PD patients have significantly lower amounts of glutathione in their cytoplasm in the substantia nigra. It has been determined that glutathione functions in the brain as an antioxidant and redox regulator [2].

Increased lipid peroxidation and DNA damage in neural cells have both been linked to oxidative damage in PD patients' brains. As a result, the aberrant protein, -synuclein, accumulates and aggregates because these cells are unable to handle it. It is now known that aberrant -synuclein and mitochondrial dysfunction work in concert to cause neurodegeneration in Parkinson's disease (PD).

***Address for Correspondence:** Hasan Siddique, Department of Zoology, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, Uttar Pradesh, India; E-mail: Hasan_siddique09@rediffmail.com*

Date of Submission: 10 July, 2022, Manuscript No. AIM-22-73493; **Editor Assigned:** 12 July, 2022, Pre-QC No. P-73493; **Reviewed:** 20 July, 2022, QC No. Q-73493; **Revised:** 26 July, 2022, Manuscript No. R-73493; **Published:** 03 August, 2022, DOI: 10.37421/2327-5162.2022.11.401

The current pharmaceutical therapy for Parkinson's disease (PD) focuses on the chemical anomalies and dopamine depletion in the nigrostriatal brain cells to alleviate the motor impairment brought on by the depletion of dopamine. The majority of the drugs that are currently on the market are authorised to treat PD-related clinical symptoms. Despite the development of other drugs for the treatment of Parkinson's disease, L-dopa remains the cornerstone of the illness's symptomatic management. Dopamine agonists, MAO-B inhibitors, catechol-O-methyl transferase (COMT) inhibitors, antimuscarinic (anticholinergic) drugs, amantadine, glutamatergic agents and adenosine antagonists are some of the other treatments. There are additional non-pharmacological therapies for Parkinson's disease (PD), such as deep brain stimulation, neurorestorative therapy and ablative surgery [3].

What's more, there isn't much proof that any of the drugs on the market can stop Parkinson's disease from progressing. Recent studies on neuroprotection are based on the hypothesis that ROS and oxidative stress are the main contributors to the neurodegeneration in PD.

We will thus concentrate on the data supporting natural antioxidant usage in PD prevention and modification of the neurodegenerative process.

In particular, flavonoids and diarylheptanoids have demonstrated antioxidant capabilities that may be employed to treat neurological illnesses brought on by oxidative stress. The most prevalent phenolic phytochemicals are flavonoids, which also include flavones, isoflavones, anthocyanidins, flavonols and flavanones. Phytochemicals like flavonoids are found in herbal remedies including Ginkgo biloba, *Withania somnifera* (ashwagandha), curcumin, green tea and *Hypericum perforatum* (St. John's wort).

Due to their accessibility as over-the-counter medications and popularity among those suffering from neurogenerative disorders, hydroxytyrosol, *G. biloba*, W. *somnifera*, curcumin, green tea and H. *perforatum* were examined in this research for their potential antioxidant properties [4].

The writing search was performed utilizing Google Scholar, PubMed, Scopus, ScienceDirect and SciFinder. The references arranged in this survey included writing from 1960 until 2019. The method involved with distinguishing the most important distributions depends on the examination question "does the cell reinforcement limit of the chose phytochemicals have a neuroprotective impact in PD cell line and creature models" with watchwords "Parkinson's illness," "neurodegeneration," "cell reinforcements," "responsive oxygen species," "polyphenols" and "flavonoids." Studies were incorporated in the event that they (1) were pertinent to the cancer prevention agent property impact of the chose phytochemicals or hydroxytyrosol on PD cell line models, (2) were applicable to the cancer prevention agent property impact of the

chose phytochemicals or hydroxytyrosol on creature models, or (3) depicted the cancer prevention agent properties, pharmacokinetics of the chose phytochemicals or hydroxytyrosol. Studies were prohibited on the off chance that they were distributed in a language other than English and did exclude something like one of the watchwords [5].

Medicines made from natural plant-based ingredients can be used to treat Parkinson's disease (PD). Based on their high antioxidant properties and accessibility as dietary supplements or complementary therapies, hydroxytyrosol, G. biloba, W. somnifera, curcumin, C. sinensis and H. perforatum were selected for this review.

Conclusion

Chemical tests have revealed that the antioxidant potencies of certain substances and botanicals vary. The maximum antioxidant was found in green tea crude extracts, according to reported IC50 values.

Acknowledgement

None.

Conflict of Interest

No potential conflict of interest was reported by the authors.

References

1. Brierley, Daniel I. and Colin Davidson. "Developments in harmine pharmacology-Implications for ayahuasca use and drug-dependence treatment." *Biol Psychiatry* 39 (2012): 263-272.
2. Callaway, James C., Glacus S. Brito and Edison S. Neves. "Phytochemical analyses of *Banisteriopsis caapi* and *Psychotria viridis*." *J Psychoact Drugs* 37 (2005): 145-150.
3. Chagas-Paula, Daniela Aparecida, Tiago Branquinho Oliveira, Tong Zhang and RuAngelie Edrada-Ebel, et al. "Prediction of anti-inflammatory plants and discovery of their biomarkers by machine learning algorithms and metabolomic studies." *Planta Med* 81 (2015): 450-458.
4. Chagas-Paula, Daniela A., Tong Zhang, Fernando B. Da Costa and RuAngelie Edrada-Ebel, et al. "A metabolomic approach to target compounds from the Asteraceae family for dual COX and LOX inhibition." *Metabolites* 5 (2015): 404-430.
5. Creek, Darren J., Warwick B. Dunn, Oliver Fiehn and Julian L. Griffin, et al. "Metabolite identification: Are you sure? And how do your peers gauge your confidence?." *Metabolomics* 10 (2014): 350-353.

How to cite this article: Siddique, Hasan. "Using Organic Antioxidants to Treat Parkinson's Illness: A Review." Alt Integr Med 11 (2022): 401.