



Using Ayurvedic Herbs and Dietary Practices to Mediate Symptoms of Huntington's Disease

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Hypothesis: Incorporating Ayurvedic herbs, such as Ashwagandha and Brahmi along with the dietary practices of cooking warm digestible food, and accurately pacing the timing of meals, contributes to reduced progression and symptom severity in Huntington's disease by targeting factors such as neuroinflammation, oxidative stress, and mitochondrial health.

Abstract :

Huntington's Disease (HD) is a progressive neurodegenerative disorder characterized by motor dysfunction, cognitive decline, and psychiatric disturbances, often with a genetic predisposition. HD remains with no cure and limited treatment options, primarily focused on symptom management rather than halting disease progression.¹ By analyzing randomized controlled trials and case studies, this paper concludes that Ayurvedic interventions, including herbal treatments and dietary practices, may help alleviate symptoms of Huntington's Disease by supporting motor function, enhancing cognitive resilience, improving quality of life, and reducing psychiatric symptoms such as depression and anxiety. The inclusion criteria for the studies reviewed covered a range of patient ages and stages of HD, with an international scope to assess the broader applicability and effectiveness of Ayurvedic approaches across diverse populations. There is evidence that dietary components play a critical role in managing neurodegenerative diseases, like HD. Ayurvedic dietary practices, with a focus on neuroprotective herbs and balanced food combinations have demonstrated potential in maintaining neurological health and slowing disease progression. This meta-analysis aims to evaluate the impact of Ayurvedic dietary recommendations, including the incorporation of herbs like Brahmi, Ashwagandha, and Turmeric, on HD progression and symptom management. Investigating the dietary implications of Ayurveda provides a unique and promising approach for HD, as Ayurvedic practices focus on neuroprotective herbs and dietary guidelines that target underlying mechanisms like neuroinflammation, oxidative stress, and mitochondrial health. By potentially slowing disease progression and alleviating symptoms, Ayurvedic interventions could complement existing therapeutic options, offering a holistic approach to managing HD.

I - Introduction

Huntington's Disease (HD) is a progressive, hereditary neurodegenerative disorder characterized by the deterioration of motor, cognitive, and psychiatric functions. It is caused by an autosomal dominant mutation in the HTT gene, which leads to an abnormal expansion of CAG trinucleotide repeats. This genetic defect results in: the progressive degeneration of

neurons; particularly in the basal ganglia and cerebral cortex, leading to severe impairments in movement, cognition, and emotional regulation.²

The progression of HD manifests through a variety of symptoms that worsen over time. Motor symptoms include chorea (involuntary, jerky movements), dystonia (muscle contractions), rigidity, and bradykinesia (slowness of movement). Cognitive symptoms affect executive function, memory, and concentration, impairing a patient's ability to plan, organize, and process information. Psychiatric symptoms often include depression, anxiety, apathy, impulsivity, aggression, and, in some cases, psychosis, all of which significantly impact the patient's quality of life.³

Currently, there is no cure for HD, and available treatments focus primarily on symptom management. Pharmaceutical interventions such as tetrabenazine are used to control chorea, while antidepressants and antipsychotic medications help manage psychiatric symptoms. However, these treatments offer only temporary relief, often come with significant side effects, and do not halt disease progression. The limitations of conventional treatments underscore the urgent need for alternative or complementary therapies that target underlying pathogenic mechanisms such as oxidative stress and neuroinflammation.⁴

Ayurvedic medicine, a holistic healing system with a history spanning over 3,500 years, originates from India. A core tenet of Ayurveda is maintaining health through a balanced lifestyle and harmony among the three doshas—Vata, Pitta, and Kapha, rather than merely treating symptoms. Ayurveda emphasizes disease prevention and overall well-being through natural interventions, including diet, lifestyle modifications, and herbal remedies.⁵ The system employs a variety of natural herbs and minerals known to support bodily functions, including neuroprotection. Ayurvedic traditions have long emphasized the importance of mental clarity, cognitive strength, and nervous system health.

Certain Ayurvedic herbs have been studied for their neuroprotective properties, with Ashwagandha (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) standing out for their potential benefits in neurological health.⁶ Both herbs have been used traditionally to enhance cognition, reduce stress, and protect against neurodegeneration. Recent scientific research suggests that these herbs may possess anti-inflammatory, antioxidant, and neuroplasticity-enhancing effects, making them promising candidates for complementary treatment in neurodegenerative diseases such as HD.⁷

This paper investigates the potential of Ayurvedic herbs, specifically Ashwagandha and Brahmi, and turmeric as well as external therapies and dietary practices in the treatment of Huntington's Disease. By exploring their effects on neuroplasticity, oxidative and stress reduction, this study seeks to assess their role as complementary therapies for slowing HD progression.

The primary hypothesis of this research is that Ayurvedic herbs can mitigate the effects of HD by promoting neuroplasticity, reducing oxidative stress, and improving both cognitive and motor function. The secondary hypothesis is that incorporating these herbs into Ayurvedic dietary and lifestyle practices may contribute to symptom alleviation and potentially modulate disease progression in HD patients.

By bridging traditional Ayurvedic wisdom with modern scientific inquiry, this study aims to shed light on the potential integrative role of these herbs in managing Huntington's Disease, paving the way for future research and clinical applications.

II - Literature Review: Aaqil

The following literature review dated between 2004 to 2025 examines studies that meet the stated inclusion and exclusion criteria related to Huntington's disease (HD), which is a progressive neurodegenerative disorder characterized by motor dysfunction, cognitive decline, and psychiatric disturbances, with a strong genetic predisposition.¹ Despite advancements in understanding its pathophysiology, HD remains incurable, and current treatments primarily focus on symptom management rather than halting disease progression.² However, emerging evidence underscores the role of dietary components in managing neurodegenerative diseases, including HD.³ Ayurvedic dietary practices, rooted in ancient Indian medicine, offer a promising approach by emphasizing neuroprotective herbs and balanced food combinations.⁴ Key Ayurvedic herbs such as Brahmi (*Bacopa monnieri*), Ashwagandha (*Withania somnifera*), and Turmeric (*Curcuma longa*) have shown potential in alleviating neuroinflammation, oxidative stress, and mitochondrial dysfunction, all factors contributing to HD progression.⁵ Additionally, Ayurvedic principles suggest the consumption of warm and simple-to-digest food items according to established intervals, underpinned by principles of Ayurveda, also contribute to maintaining an individual's neurological fitness.⁴

These dietary practices align with emerging research suggesting that targeting underlying mechanisms, rather than solely addressing symptoms, may slow disease progression and improve patient outcomes. The planned meta-analysis will then quantitatively synthesize motor and cognitive outcomes to estimate the complementary efficacy of these diets alongside standard HD treatments. We included RCTs, cohort, case control, and cross-sectional studies in HD patients ≥ 18 years, focusing on Ashwagandha, Brahmi, or Turmeric supplementation or structured Ayurvedic diet. Excluded were studies older than 21 years, non-peer-reviewed sources, and non-Ayurvedic interventions. Combining Ayurvedic dietary interventions including herbs like Ashwagandha and Brahmi, with standard pharmacological treatments such as tetrabenazine for chorea and SSRIs for depression may offer a synergistic strategy that addresses both symptom relief and underlying neurodegenerative mechanisms in individuals with HD, though further clinical studies are needed to evaluate this integrative approach.⁸

III - Methodology: Yeshaswi

A comprehensive systematic review of relevant literature was conducted in order to identify clinical studies of Ayurvedic interventions, and answer these research questions. A systematic search was conducted across major scientific databases such as PubMed, ScienceDirect, and MDPI to ensure a broad yet focused selection of studies. Studies were selected based on defined inclusion and exclusion criteria. Eligible studies focused on recent clinical trials, randomized controlled trials, case studies, and experimental research focusing on Ayurvedic dietary interventions. Selected studies were published within the last twenty years, involved globally diverse populations over the age of eighteen, and were not restrictive to any specific sex or ethnicity. Research that presented conflicts of interest, such as studies funded by pharmaceutical companies without independent verification, outdated data (older than twenty years), or non-scientific sources (such as non-peer-reviewed sources, blogs, or opinion articles, or non-original studies) were excluded, unless used to identify relevant primary studies.

Data collection was focused on randomized controlled trials (RCTs), cohort studies, case-control studies, and cross-sectional studies, with a preference for primary literature. Meta-analyses and systematic reviews were referenced only if they cited relevant primary research. The findings from selected studies were systematically reviewed and qualitatively synthesized to assess the therapeutic potential of Ashwagandha and Brahmi for symptom reduction in Huntington's Disease. This will be measured using established evaluation tools such as the Unified Huntington's Disease Rating Scale (UHDRS), which quantifies motor, cognitive, and behavioral function.⁸

The effects of Ashwagandha and Brahmi on Huntington's Disease symptoms were assessed based on outcome measures reported in selected studies. Symptom reduction was evaluated using standardized clinical scales, including the Unified Huntington's Disease Rating Scale (UHDRS), which quantifies motor, cognitive, and behavioral changes.⁹ Findings from eligible studies were synthesized to determine whether these Ayurvedic herbs contribute to slowing neurodegeneration, inflammation reduction, and symptomatic improvement in Huntington's Disease patients.¹⁰

IV - Ayurvedic Herbs and Therapeutic Remedies for Huntington's Disease: Hasmitha Using Herbs as a treatment for Huntington's Disease

Ayurveda most heavily relies on herbal remedies and the usage of natural substances for healing. In western medicine, Huntington's Disease (HD), is a Neurological Disorder that has been commonly treated through monoamine depletors, antipsychotics, antidepressants, and tranquilizers (Gulati et. al, 2021). Antidepressants and antipsychotics have various pharmacological effects and are usually used to treat sleep (Krystal, 2010). Monoamine receptors, refer to a broad category of proteins located on nerve receptors, which interact with Monoamine neurotransmitters, a group of neurotransmitters in the central nervous system (CNS) such as dopamine, serotonin, and norepinephrine. These neurotransmitters are all responsible for mood, behavior and cognitive functions. (Science Direct, n.d.) The dysregulation

or malfunctioning of these receptors explain many of the behavioral aspects of Huntington's Disease. However, the chronic use of drug based treatments have shown chronic long-term effects. To combat these long term effects, many herbs have been shown therapeutic effects against HD (Gulati et. al, 2021). This can be understood by investigating the relation between herbs and different doshas (brain-types) and how that contributes to the neurological activity found in HD.

The field of Ayurveda focuses on doshas, which are commonly seen as elements or regulating principles of the mind, body and behavior. The Vata, Kapha, Pitta doshas are the three main doshas that are used in Ayurveda, and these principles are key considerations to choosing herbs to treat Ayurvedic conditions and finding well as external therapies to calm the nerves (Travis, Wallace 2018 et. al Dr. Vasanti Aruva 2025). The knowledge of doshas can also be used to explain many symptoms of Huntington's Disease. For instance, a disruption in the Vata dosha, which governs movement, is said to contribute to Huntington's Chorea or also known as **Tandava Roga**. Tandava is the name of a dance with strong vigorous movement, and describes the vigorous involuntary movement in Huntington's chorea. Huntington's chorea are characterized to be jerky, involuntary physical movements. Herbs have prominent properties that usually correlate with one dosha, but there are also many herbs that have varied properties that could fit into multiple doshas (brain-types).

In HD, the genetic predisposition is due to the mutation of the protein Huntingtin, which is a protein critical in protein trafficking, cell apoptosis, and transcriptional regulation. With a greater amount of this mutant protein, it disrupts cellular pathways especially in the nervous system. The pathological mechanisms that follow this mutation are responsible for the development of HD, particularly the neuronal dysfunction, within the striatum and cortex of the brain (Gil JM, Rego AC. et. al 2008). **The degeneration of neurons in HD is characterized by the progressive loss of motor coordination and muscle function (Irfan Khanam et. al 2022).** While scientists are still trying to figure out the pathogenesis of how HD forms, some commonly found mechanisms include abnormal protein-protein interactions (between normal and mutated Huntingtin); mitochondrial dysfunction, and oxidative stress (Tong et. al 2024). The dysfunction of the Mitochondria tends to slow down growth and metabolism of the human body. The nervous system is responsible for metabolic and growth factors involved in the human body. Growth factors are defined to be biological molecules that expedite the growth of cells (Stone et. al, 2023). Metabolic factors are an element that influence the rate or matter at which the body converts food to energy. Specifically, metabolism refers to the reactions that occur throughout the body within each cell (Sánchez López de Nava et. al 2022). With disruptions of biological and neurological components of Huntington's Disease, the usage of herbs and therapies can be instrumental in regulating these processes. **Specifically, the usage of herbs such as Ashwagandha, Brahmi, and Turmeric are said to have neuroprotective effects, which can be vital in repairing the nervous system in HD** (Vishwas Gulati et. al 2021). Additionally, ayurvedic therapies such as Rasayana can be instrumental in aligning with

properties of different doshas, diversifying and allowing for a variety of potential treatment methods for HD patients (Malavika Savitha et. al 2022).

When determining the neurological properties of how each herb contributes to the progression of HD, it is important to note that each dosha governs different areas and functions of the brain. Specifically, they influence cognitive processes, emotions and physical well-being. Understanding Doshas are vital as they can provide a physiological foundation to understanding individual differences. In order to clearly understand the herb-dosha correlation, it is important to understand the properties of the doshas used in Ayurveda, to treat a complex neurological disorder like HD (Travis Wallace et. al 2015).

Doshas:

As mentioned earlier, Doshas are defined as different types of brain functioning. In Ayurveda, Doshas are responsible for explaining the many differences across the human body from biological components to behavior. There are many physiological components associated with them including: blood chemistry, genetic expression, and chronic diseases. They exhibit different patterns over six major systems of the nervous system: Prefrontal executive circuits, Reticular Activating System, Autonomic, Enteric, Limbic, and Hypothalamic control. These patterns indicate mental and physical behaviors of patients, including information from the fight-and-flight response of the patient to the types of food they prefer, and the rate of their metabolism (Travis Wallace et. al 2015). In HD, having a knowledge of Doshas can help select suitable and effective Ayurvedic remedies in helping treat the disease.

Vata Dosha

The Vata dosha is arguably one of the most prominent doshas in Ayurveda, it controls movement and regulates biological processes such as cell signaling, excretion, cognition and regulates the Pitta and Kapha doshas. Vata tends to be described elementally as Akasa (Ether) and as Vayu (air). It is a brain-type that performs activity quickly (Travis Wallace et. al 2015). According to Dr. Vasanti Aruva, when choosing Ayurvedic herbs, it is important to make sure the properties of the herb produce the effect of what needs to be healed within the patient, in order to determine if we want to increase the usage of that herb. In this case, Huntington's Disease has the highest relevance to air elements, as movements are uncontrollable due to the Tandava Roga (Malavika Savitha et. al 2022). With the air element being out of balance, choosing an herb or treatment which works on the air element can improve the patient's condition efficiently. The Vata dosha is associated with the elements of space and air, it mainly governs the movement, nervous system. An imbalance in the Vata dosha, can manifest symptoms like anxiety or restlessness. People that exhibit this dosha tend to perform quickly, learn quickly, and forget quickly. They also tend to have an edge in creative problem solving (Travis et. al 2015).

When analyzing the relationship between the herb-dosha balance, it is important to understand the properties of each herb. Ashwagandha (*Withania Somnifera*) is a primary example of an herb correlated to balance the properties of the Vata Dosha. It is an Ayurvedic herb used to treat anxiety, insomnia and regulating oxidative stress (Guo et al. 2024). It is very

helpful in balancing the Vata dosha due to its adaptogenic properties, or ones that are correlated to Ashwagandha being an Adaptogen. An adaptogen refers to a substance that is part of a group of plants or phytochemicals that promote the tolerance of organisms during stressful conditions. (Niusha et. al. 2022).

Another example of an herb that helps balance the Vata dosha is Brahmi. Brahmi is a herb known for its abilities to reduce stress and anxiety by potentially influencing hormonal balance. It is also useful in enhancing memory, sleep, and allows for mental clarity. (Walker E.A. et al. 2023). The Nootropic properties of Brahmi help explain its abilities to restore cognitive functions, such as which help thinking, learning and memory. Nootropic drugs are known for being “smart drugs” and fall under a category of medicinal substances known for enhancing cognitive abilities (Malík M, Tlustoš, 2022).

Analyzing these properties, in order to choose herbs that sufficiently balance the restlessness and dryness associated with the Vata Dosha, choosing herbs with grounding, stabilizing and mainly restorative properties; particularly those that reduce stress, propel cognitive function and stabilize the nervous system are the most effective.

Kapha Dosha

The Kapha dosha is another one of the primary doshas in Ayurveda. The Kapha dosha is composed of Tejas or Agni (Fire) and Ap (water) mahabhutas (Shilpa et. al 2011). It lubricates various tissues, ensuring health stability, and mental stability. In addition, it also provides structure. Kapha dosha tends to be described elementally as water and earth elements (Ramesh et. al 2024). Its properties tend to be slow and steady, individuals that exhibit this dosha tend to be more methodical in their thinking. They are calm, slow to act and move purposefully and carefully. In terms of biological processes, the Kapha dosha is responsible for regulating anabolism, growth and maintenance of structure, as well as storage and stability (Travis Wallace et. al 2015).

Turmeric (Curcumin) and Triphala (Amalaki, Haritaki, and Bibhitaki) are common herbs used to balance this dosha. These Ayurvedic medicines maintain a balance to the excess amount of Kapha dosha (Ramesh et. al 2024). Turmeric, specifically, is not advised to be given in conditions dealing with the imbalance of the vata dosha; as overusing it can dry out the body and intestine leading to constipation. It is advised to be given when patients have a weakened balance in the Pitta or Kapha dosha (Kumar et. al 2017). Triphala is a polyherbal ayurvedic medicine, comprising many fruits and plant species. It is known for being a tridoshic rasyayana; or rejuvenating all three doshas: Vata, Kapha, and Pitta. Its properties are notable for its abilities to boost patients’ strength and immunity; and it is due to this property that patients of almost all ages can be treated with this herb (Peterson et. al 2017). With these ayurvedic herbs, individuals are not frequently prone to specific diseases such as: obesity and drowsiness associated with an excess amount of Kapha. This is heavily associated with the disease resisting properties of the Kapha dosha. (Balan et. al 2025)

In terms of understanding the relevance to Huntington's disease, the Kapha dosha is not specified to have a particular role in HD; as HD is primarily understood to have an imbalance in the Vata dosha. However, across many neurodegenerative diseases, such as Alzheimer's and Parkinson's disease, the depletion of the Kapha dosha, also known as kshaya, aggravates the imbalance of the Vata dosha (Balan et. al 2025). While the effect of the Kapha dosha is not as notably strong in the prevalence of HD, it is important to understand its connection to HD to be able to find solutions that can treat the condition on many different levels.

Pitta Dosha

The Pitta dosha is composed of Ap (water) and Prithvi (earth) (Shilpa et. al 2011). Pitta Dosha is characterized by its innate fiery nature, governing functions like metabolism, digestion, and skin. Pitta dosha is balanced with herbs that have sweet and bitter tastes like including the herbs: fenugreek, cardamom, shatavari, turmeric, and fresh ginger (Mackonochie et. al 2023) If the pitta dosha is not maintained, it will lead to indigestion and skin issues like rashes or acne. (Joy)

The relationships between herbs and doshas reinforce the idea that a single herb can balance the properties of not just one, but multiple doshas. This can be seen with the example of turmeric to balance properties of both the Kapha and Pitta doshas (Kumar et. al 2017). This is explained by the fact that doshas can overlap properties whilst maintaining distinct identities. Although, there is not much scientific evidence that correlates the direct relation between the pitta dosha and Huntington's Disease. Given the overlapping properties of many doshas however, it is said that pitta dosha, like many of the other doshas, has the capacity of increasing different symptoms in neurological diseases and even disorders. Specifically, it is known for increased symptoms of Mania and bipolar disorder, which are symptoms in HD. Although HD is known to mainly be affiliated with the imbalance in the Vata dosha, there is known to be a secondary involvement of the pitta dosha (Banjar et. al 2023) Through understanding how the different herbs balance doshas, as well as how many doshas have overlapping properties can help understand how these herbs can support finding new and personalized methods for combatting HD.

Herbs:

Ashwagandha

As previously defined, there are no direct cures for the diseases usually treated in Ayurveda, specifically with Huntington's Disease. By understanding examples and specific properties of herbs that are used to generally treat common overlapping symptoms of various neurological disorders i.e. oxidative stress or chorea; can understand which treatments are more effective in the treatment and regulation of HD. The primary function of Ashwagandha is as an adaptogenic herb used as a stress regulator (oxidative stress). In the nervous system, these herbs are relevant because they are known to boost the immune system under stressful conditions, potentially helping the body's recovery process during HD (Panossian et. al 2010). A

notable way this is administered is through taking a tonic, and through root extracts. It also has anti-inflammatory properties and for treating conditions like diabetes and cancer (Kim et al. 2025). Studies conducted with Ashwagandha usually focus on its metabolic effects especially when looking to treat conditions like diabetes and its antioxidant properties. For instance in its use with white albino rats, there was shown to be a reduced level of cholesterol in rats with hypercholesterolemia and observed antioxidant effects as well (Mikulska et al., 2023)

Although it may seem like Ashwagandha is more prominent in treating conditions like disease, focusing on physiological mechanisms of the body; studies with Ashwagandha have shown numerous improvements in neurological health. In a study using Ashwagandha root extract on mice, it showed improvement in depression of mice it helped them feel less stressed because it boosts BDNF (Brain-derived Nootropic Factor) the brain's growth and repair protein (Kim et al., 2024) In neurodegenerative disorders similar to Huntington's Disease, studies using Withania Somnifera extract in Parkinson's have shown on rats, has shown that the usage of it reduces the effect of hydroxyldopamine or 6-hydroxyldopamine (6-OHDA) oxidopamine which is a neurotoxin that damages dopaminergic neurons regulating dopamine. As a result of this procedure, there was also seen to be decreased oxidative stress in the rats (Ahmad et al. 2005).

Analyzing findings from these experiments using Ashwagandha to treat different neurological disorders, provides common overlapping symptoms: Ashwagandha has been used to alleviate such as oxidative stress, neuronal degeneration and mitochondrial dysfunction which are parallel symptoms in Huntington's disease. Given these properties, Ashwagandha can be used as a solution for HD through its alleviating neuronal degeneration, enhancing cognitive function; stabilize motor function in patients with HD.

Comparing this with modern day treatments of HD, most modern pharmacological medicines used to treat HD have their benefits and downsides. Medicines commonly used to treat physical symptoms commonly include tetrabenazine and deuterabenazine which is used to treat the chorea parts of HD. For the behavioral components, there are some antipsychotic drugs used to treat chorea, hallucination and delusions however there are side effects that worsen muscle contraction in HD (National Institute of Neurological Disorders and Stroke). These antipsychotics are included to but not limited to Olanzapine and Risperidone, and while they do improve chorea and behavioral symptoms such as sleep, mood dysfunction, and prevent weight loss of Huntington's Disease; they also carry side effects physiologically. For example, Olanzapine leads to weight gain and sedation and Parkinsonism which is a syndrome said to mimic symptoms of Parkinson's disease such as tremors, rigidity and muscle stiffness. The main impacts of Risperidone leads to hypoprolactinemia (excess prolactin, hormone in pituitary gland), sedation and parkinsonism. (Coppen and Roos, 2023). Looking at how these physiological mechanisms impact HD, in the end they find solutions to the condition of HD on the surface level treating the condition on a short-term basis such as movement and mood. Rather than finding solutions for the condition on a more underlying level such as what symptoms originally caused the neuronal dysfunction of HD initially. Ashwagandha by targeting oxidative stress, mitochondrial dysfunction and neuronal degeneration which fuels the disease

have benefits that are more neuroprotective and beneficial in the long-run of treating the disease.

Brahmi

Brahmi (*Bacopa Monnieri*) is an herb that is traditionally used to support the sensory organs and the nervous system. It is well-known for its neuroprotective properties and is classified as a Nootropic drug, which as defined before can be helpful in enhancing cognitive properties of the brain in patients (Chaudhari). Brahmi is also known for being anti-inflammatory, and acts as an antioxidant. This can be explained by the compounds inside Brahmi known as Bacosides which are neuroprotective by helping lower oxidation and inflammation in the brain which supports the transmission of chemical signals in neurotransmitters such as acetylcholine. Other neurotransmitters the usage of *Bacopa monnieri* particularly the bacosides can stimulate, is the neurotransmitter of serotonin (Mathur et al., 2016)

Brahmi has been administered through medicated oils or specialized formulations. Our research signifies its cognitive benefits for the patients. In one of the studies, healthy elderly participants who took Brahmi for 12 weeks showcased improvements in attention, cognitive processing, memory, and overall brain function. (Peth-Nui et al.) Additionally, *Bacopa Monnieri* administered as a leaf powder is said to have many antioxidant effects (Walker and Pellegrini et al.) These antioxidant effects specifically include protecting the brain against oxidative damage, which is the imbalance of antioxidants and free radicals in the brain (Simpson et al.). Similar effects were also seen by seeing Brahmi as dietary supplements (Choudhary, Kumar, & Malik, 2013).

Oxidative stress is a major factor in contributing to the onset progression of Huntington's Disease (HD), specifically by increasing the progression of neuronal degeneration in the striatum and other parts of the brain (Kumar and Ratan). The usage of Brahmi can be beneficial for reversal of this neuronal loss. Along with neuronal degeneration, another form of Oxidative stress is the Lipid Peroxidation, where oxidative stress leads to damage in the membrane lipids changing the properties of these cell membranes, and the inactivation of the enzymes and receptors (Kumar and Ratan). The usage of brahmi can stimulate antioxidant enzymes against oxidative stress. In a study analyzing the impacts of administering Brahmi in rats with oxidative stress, there was an increase in the antioxidant enzymatic activity of GPx (glutathione peroxidase), SOD (superoxide dismutase), and CAT (catalase) (Simpson et al.)

Overall, looking at the ability of Brahmi to boost antioxidant enzymes and reduce neurotransmitter activity, shows that it can assist with methods of communication in the brain and reduce oxidative stress. Currently, many pharmaceutical drugs and treatments used to address components of Oxidative stress in HD include the usage of Vitamin E which is neutralizes the lipid peroxides, N-acetylcysteine which reduces free radical buildup, and ACE inhibitors act as antioxidants and decreases the amount of reactive oxygen species as well as supporting mitochondrial function. However, the impact of these pharmaceutical interventions on the oxidative stress in HD is very short-term due to its poor abilities of blood-brain barrier penetration and their short biological half-lives making them a more temporary solution to HD

(Ashok et al., 2022). On the other hand, Brahmi is seen as a more reliable long term solution for HD especially when addressing components of Oxidative stress as it not only regulates the antioxidant mechanisms of HD, but also focuses on halting the long-term progression of HD by focusing on the key underlying factors that provoke neuronal degeneration in the condition.

Turmeric

Turmeric (*Curcuma longa*) (CL), also known as Haldi, is a perennial (seasonal) plant that helps destroy misfolded proteins in HD, and prevents the aggregation which is a key factor for neuronal degeneration in HD (Choudhary, Kumar, & Malik, 2013) (Cole et al., 2007) Turmeric does this specifically because it has anti-inflammatory, neuroprotective and antioxidant effects that make it effective in combatting neurodegenerative diseases like HD. Similar to Brahmi, turmeric has the ability to induce antioxidant enzymes (superoxide dismutase, catalase, glutathione peroxidase, glutathione-S-transferase, and hemeoxygenase) which neutralize free radicals and reduce oxidative stress (Choudhary, Kumar, & Malik, 2013).

Typically, turmeric is used to treat inflammation, skin diseases wounds and it is used as an antibacterial and antiseptic. It is yellow in color and has been known to be used as a spice in many households. Specifically it is also known to be used as extracts and supplements. There are also studies that with the usage of turmeric oil can help neuronal and kidney disorders. In rats, for instance a dosage of *Curcuma* (turmeric) oil had helped with ischemic (lack of blood flow) induced neurological functional deficits (Prasad & Aggarwal, 2011). Like Ashwagandha and Brahmi, it has neuroprotective properties and has been recorded to have impacts on conditions like dementia (Choudhary, Kumar, & Malik, 2013) (Cole et al., 2007). While there are no specific exact forms turmeric is given on HD, supplementation upon four weeks can prevent age-related cognitive decline, reducing fatigue and helping psychological stress in adults (Perales-Salinas et al., 2024b).

Turmeric is a very good herbal agent for targeting prominent symptoms of HD such as oxidative stress. Like Brahmi, Turmeric combats oxidative stress and does this by limiting Reactive Oxygen Species (ROS), and it is a chelator which means it can attach to metal ions which prevents oxidative damage in brain cells (Cole et al., 2007). As mentioned previously, another component that Turmeric uniquely has the potential to combat is the memory loss in HD, particularly through helping dementia. This is important to note because due to the cognitive declination in HD, it is considered a form of dementia (Peavy et al., 2010). For example, studies have recorded the usage of Curucumin helps vascular dementia which is a brain disorder that causes cognitive decline due to damage to the blood vessels in the brain; as well as neurodegenerative dementia (Sanders et al) (Choudhary, Kumar, & Malik, 2013). Through its abilities to combat varieties of HD symptoms, shows the multifaceted capacities of Turmeric to treat not only neurological diseases but also other diseases present in the body.

Like Ashwagandha and Brahmi, Turmeric targets some of the similar symptoms of HD in the long-term but also has a higher focus on cognitive decline. Unlike many modern symptoms that target involuntary movements and mood changes (Hickey et al., 2012), turmeric provides a sharper long term intervention for HD because it targets more underlying factors such as the

early cognitive decline, and it prevents neurons from facing cognitive damage which protects the brain's function in the long-term (Labanca et al., 2021).

Therapeutic Remedies in Ayurveda and applying it to HD

Beyond herbal remedies, it is important to also understand the potential of many other existing practices that apply ayurvedic treatments to help patients with neurological disorders.; especially given the fact that there is no direct cure for HD. Apart from herbs, there are many therapeutic practices and treatments. These interventions tend to be simple but produce complex effects depending on the patient's condition. They usually involve combining the usage of herbs, household ingredients and different therapeutic interventions such as oil massaging to heal the patient. According to Dr. Vasanti Aruva, some examples include removing mucus in the body with honey, rejuvenating the body with new cells with milk, and taking herbs with hot water.

In Ayurveda some notable treatments are usually Shirodhara which is an oil dripping therapy, and Abhyanga which include the usage of oil massage based treatments. When choosing herbs to treat Huntington's Disease, depending on the condition we choose the herb there are many properties to correlate. In the case of HD, being a neurological disease we focus on choosing herbs that have the ability to alleviate symptoms prominent in neurological diseases.

In therapies like Abhyanga, a form of it used is known as Sarvanga Abhyanga, which massages the whole body with medicated oil and given that skin has melanocytes which have similar origins to neurons, neurological systems are very closely related to the skin (Malavika & Savitha, 2022). This indicates that the usage of Abhyanga can propel or excite the activity of the neurological systems in the human body. In HD, there is a degeneration of the neuronal activity which from analyzing the properties of Abhyanga has a higher possibility of treatment through the usage of Abhyanga.

Rasayana is another practice that is used in Rasayana which translates to rejuvenation. It helps generate homeostasis in the human body. It includes a specialized use of herbs, paired with a form of a lifestyle and self-discipline to have less etiological factors affect the body (Goyal, 2018). According to Dr. Vasanti Aruva, Rasyana can slow down and even stop or reverse the synaptic loss in Huntington's. This therapeutic practice's rejuvenative properties are highlighted through its abilities to create new good cells.

Since HD, specifically refers to an imbalance in the Vata dosha, these therapies and herbs calm excessive movement (chorea), help with mood and keep the nervous system intact. Shirodhara, Abhyanga, and Rasyana complement herbal treatments such as Ashwagandha, Brahmi and Turmeric by allowing recovery from neurological degeneration. Overall, compared to medicinal drug based treatments, Ayurvedic herbs and therapies provide a more holistic view of treating HD in the long-term by targeting underlying mechanisms, such as oxidative stress, cognitive decline and mitochondrial dysfunction.

V - Ayurvedic Dietary Practices and Their Impact on Huntington's Disease: Hasini

The Sattvic diet, which is grounded in Ayurvedic principles, emphasizes purity, clarity, and balance. This type of diet is known to support mental clarity, emotional stability, and overall brain health, making it highly relevant for neurological conditions such as Huntington's Disease (HD). The focus on fresh, whole foods, and the avoidance of processed or overly stimulating foods can help calm the nervous system and support cognitive function. A strong, balanced digestive system can help manage inflammation and oxidative stress, two key factors in neurodegenerative diseases like HD. Improving digestive health through Ayurvedic practices such as mindful eating, herbal remedies, and digestive enzymes can, therefore, play a role in slowing disease progression

Ghee, coconut oil, and omega-3-rich foods (such as fatty fish and flaxseeds) support brain health by nourishing the nervous system, reducing inflammation, and enhancing neuroprotection. These fats provide essential fatty acids that help maintain the structural integrity of brain cells. Spices like turmeric and foods rich in antioxidants play a crucial role in reducing oxidative stress and inflammation, both of which contribute to the progression of HD. (Westfall and Pratap) Huntington's Disease (HD), being a Neurological Disorder has been commonly treated through monoamine depletors, antipsychotics, and antidepressants. For many years, Huntington's disease has been combated through various means, including natural dietary supplements and practices. multitude number of case studies have demonstrated the benefits of dietary practices and the importance of nutrition in promoting healthy fats, antioxidant-rich foods, and neuroprotective nutrients in improving the long-term efficiency of patients' lives. The analysis of our current studies showcases how proper nutrition for Huntington's Disease is feasible with ayurvedic dietary practices and traditional medicine (Christodoulou et al). In Huntington's disease, most patients suffer from weight loss, and they must eat healthier in order to prevent major weight loss, which might hinder patient's weight intake or behaviors. The nutrition of ayurvedic dietary practices must have an individual approach, but it is proven to have not a major large scale in improving quality of life. It is strongly advised that patients maintain their calorie intake and change their diet to mediterranean diet. While there is evidence suggesting that Ayurvedic dietary practices—such as focusing on healthy fats, antioxidants, and neuroprotective nutrients—can enhance patients' quality of life, their impact on disease progression remains inconclusive. (Payyappallimana and Venkatasubramanian) Additionally, due to the weight loss commonly associated with HD, maintaining calorie intake is crucial. The evidence is not yet conclusive on whether these dietary approaches can slow disease progression or fully alleviate symptoms without other medical treatments and supplements.

VI - Discussion: Pranav

This review shows promising yet still emerging evidence supporting the use of Ayurvedic Herbs and dietary practices in managing Huntington's Disease symptoms. Studies have shown herbs such as Ashwagandha and Brahmi offer many benefits by targeting common symptoms such as oxidative stress, mitochondrial dysfunction, inflammation. Guo et al. (2024) has shown that Ashwagandha demonstrated methods in being able to regulate oxidative stress and improve antioxidant activity. Likewise, evidence in a review by Gulati et al.(2021) supports the fact that these herbs interact in pathways involved in neurodegeneration which can help become an alternative to long term pharmacological treatments that often carry side effects. Apart from just herbs dietary practices derived from Ayurvedic traditions such as using structured meal timing has been shown to control inflammation and enhance neurological function. These practices are common where dietary fats and antioxidants support cognitive resilience and help slow down neurodegenerations (Cleveland Clinic, 2023). Specifically the use of turmeric (*Cucuma longa*) has been associated with anti-inflammatory activity through the repression of inflamed cytokines (Science Direct 2024). Seen by the doshic imbalances shown in Ayurvedic frameworks shows the potential of Ayurvedic practices in interpreting Huntington's Disease symptoms. For example a disruption in Vata dosha is linked to involuntary motor movements which is a common symptom in HD (ResearchGate, 2023). Despite the promise of Ayurvedic practices in treating the symptoms of HD there are also many limitations. Most of the studies such as Brahimi and its effect on cognitive enhancement (liebertPub, 2008) are mainly preclinical or conducted in just small human cohorts. There are very few large scale randomized control trials that specifically target the idea of Ayurvedic herbs in HD patients. Not only this but the lack of funding and research in integrative medicine compared to that of Western medicine it makes it hard to make connections between Ayurvedic practices and symptoms of HD. All in all this literature review suggest that Ayurvedic interventions may benefit patients who have HD by targeting the main mechanisms of the disease. However until more research is conducted using randomized control experiments we cannot effectively conclude whether or not Ayurvedic practices can really help reduce HD symptoms in patients.

VII - Conclusion: Sai Dasari

In conclusion, The exploration of Ayurvedic herbs and dietary practices represents a promising and holistic avenue in the treatment and management of Huntington's Disease (HD). While conventional pharmaceutical interventions remain the mainstay of symptom management, their benefits are often limited by side effects and the inability to halt disease progression. In contrast, Ayurvedic medicine introduces natural, integrative remedies that not only focus on immediate symptom relief but also target underlying biological mechanisms—such as oxidative stress, mitochondrial dysfunction, and neuroinflammation—that drive HD pathology.

Evidence from preliminary studies suggests that herbs like Ashwagandha (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) may have neuroprotective and adaptogenic effects, reducing oxidative stress and supporting neuronal health. Similarly, Turmeric (*Curcuma longa*), with its well-documented anti-inflammatory and antioxidant properties, may help suppress neuroinflammation, one of the central mechanisms of HD progression. When combined with Ayurvedic dietary principles—such as consuming warm, digestible foods at structured intervals, incorporating brain-nourishing fats, and emphasizing sattvic (pure, balanced) eating patterns—these interventions create a multidimensional therapeutic strategy that addresses both the mind and body.

Importantly, Ayurveda's emphasis on individualized treatment based on doshic imbalances (Vata, Pitta, and Kapha) adds a layer of personalization often absent in conventional medicine. For instance, the correlation of Vata imbalance with involuntary motor symptoms in HD illustrates how Ayurvedic frameworks can provide a novel lens for interpreting and managing neurodegenerative conditions. This holistic integration of herbal remedies, dietary practices, and lifestyle modifications offers patients a sense of agency and balance, complementing biomedical treatments that may otherwise feel restrictive or palliative.

Despite the encouraging signs, it is crucial to acknowledge the limitations. Most existing studies on Ayurvedic interventions are small in scale, geographically limited, or preclinical. Large-scale, randomized controlled trials are necessary to establish the safety, dosage, and long-term efficacy of these herbs in HD populations. Furthermore, challenges such as variability in herbal preparation, lack of standardized protocols, and limited funding for integrative medicine research continue to hinder widespread acceptance in clinical neurology.

Nevertheless, the alignment between Ayurvedic principles and modern neuroscience is striking. Both emphasize the importance of managing oxidative damage, enhancing neuroplasticity, and supporting mitochondrial health. By bridging traditional knowledge with modern clinical approaches, Ayurveda could serve as an invaluable complement to Western medicine, particularly in chronic, complex conditions like Huntington's Disease where no cure currently exists.

In conclusion, while Ayurveda cannot yet be considered a replacement for pharmacological therapy, it has the potential to become a valuable adjunct, enhancing quality of life, reducing symptom severity, and possibly slowing disease progression. The integration of Ayurvedic herbs and dietary practices into patient care models may pave the way for more patient-centered, holistic, and sustainable approaches to neurodegenerative disease management. As further research validates these practices, Ayurveda could shift from being seen as an "alternative" system to becoming an essential partner in global strategies against Huntington's Disease and related disorders.



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