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Role of Medicinal Plants (Brahmi and Ashwagandha) in the Treatment of Alzheimer's Disease

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ABSTRACT- Current studies show that Brahmi (*Bacopa monnieri*) and Ashwagandha herbs (*Withania somnifera*) could play a positive role in the management of the debilitating Alzheimer's disease (AD). Notably, AD is currently the commonest form of dementia, a mental disorder that causes the loss of a person's intellectual ability. In particular, AD impairs the patient's judgment, memory, and other intellectual abilities, thus seriously interfering with the daily routine of a patient. Currently, there is no proven cure for AD, and the primary focus of medical practitioners is to minimize the patient's memory loss. According to scientists, traditional herbal medicines have a natural memory boosting capacity that can help reverse damages caused by AD. Brahmi and Ashwagandha are the two main plants that help treat AD. In a study on mice suffering from AD, the use of Brahmi extracts resulted in a decrease in the deposits of beta amyloid within their brains. Typically, an increase in beta amyloid is one of the main causes of memory loss; therefore, its reduction helps improve one's memory capacity. Similarly, the use of Ashwagandha in mice with AD resulted in a reduction in amyloid plaques and an improvement in their cognitive capacity. In addition, Ashwagandha has tonic characteristics that help stimulate a person's central nervous system and the brain cells. The main purpose of this paper is to analyze the benefits of Brahmi and Ashwagandha in preventing and managing AD.

Key words- Alzheimer's disease (AD), Brahmi (*Bacopa Monniera*), Ashwagandha herbs (*Withania Somnifera*), Acetyl Cholinesterase, Ayurvedic herbs

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INTRODUCTION

Typically, Alzheimer's disease (AD) destroys the nerve cells in the brain [1]. The destruction of these brain nerve cells results in the loss of memory, thinking capabilities, and normal intellectual capacity of the patient. Currently, AD ranks as the sixth leading cause of death in America, affecting over 7 million Americans [2]. Notably, an increase in age is one of the highest risk factors of AD, especially for those aged 65 years and above. However, recent studies show that the inherited form of AD can affect persons aged between 30 and 40 years [2]. AD is a progressive disease; therefore, its condition worsens over time. Early signs of AD include short memory loss; the lack of concentration, and inability to hold coherent conversations.

At advanced stages, the patient loses most of his or her memory, forgets his or her environment and loved ones, and cannot hold a normal conversation. The management of AD is very costly, resulting in a huge burden on families. Nonetheless, patients diagnosed with AD can live between 8 to 20 years, depending on their health status and age [2].

Currently, there is no known cure of AD. Some of the common drugs in managing AD include Aricept, Namenda, and Donepezil [3]. However, these drugs can only provide a short relief, while aiming at slowing down the worsening of AD symptoms and improving the quality of life of the patient [4]. In addition, they help reduce the burden of care on caregivers. Over the years, scientists

have been working to find suitable ways of treating the condition, prevent its development, and manage it [3]. One of the ways that scientists have found that can provide better results than before is the use of such traditional herbal medicines as Ashwagandha and Brahmi. Studies show that Brahmi and Ashwagandha have natural chemicals that can help boost the patient's memory and improve cognition in AD patients [5]. Therefore, combining these two herbal medicines can help reverse the symptoms of AD.

Brahmi (*Bacopa monniera*)

Brahmi is a natural herbal plant used by traditional Indian medicine men (Ayurveda) for many generations [6]. The plant is useful as a treatment of many health complications. Some of the uses of the plant include reducing anxiety and stress, neutralizing allergic reactions, treating indigestion, and boosting a person's memory [1]. The ability of Brahmi to improve and boost memory makes it potentially beneficial in treating AD. Studies show that the plant can prevent or lower the risks of AD if taken regularly and well in advance [4]. For patients diagnosed with AD, Brahmi can significantly ameliorate the patient's cognitive functioning. The plant functions by improving the patient's memory and increasing his or her rate of learning. A research by the National Brain Research Center (NBRC) using mice with AD showed that Brahmi reduces the volume of beta amyloid in their brains [5]. Notably, an increase in beta amyloid accelerates the death of brain cells, thus resulting in memory loss. In addition, Brahmi reduces the level of divalent metals in the patient's blood cells and alter the cascade of oxidative stress. Polyphenol and sulfhydryl are some of the chemicals present in Brahmi, and they are responsible for eliminating reactive oxygen particles and divalent materials [5]. Through these processes, Brahmi helps improve the patient's cognitive capability and halt the destruction of the patient's brain cells [5].

Ashwagandha (*Withania somnifera*)

Ashwagandha is one of the most powerful adaptogenic Ayurvedic medicines, and it has been in use for over a thousand of years to reduce stress [7]. Literally, Ashwagandha means horse smell, which refers to the plant's scent and its ability to boost one's stamina. Indians refer to it as a wonder drug because of its restorative powers. The two other common names for Ashwagandha are Indian Ginseng and Winter Cherry. According to an NBRC study,

Ashwagandha helps reverse the loss of memory and improve cognitive capability of mice with AD, just like Brahmi [5]. The report indicates that Ashwagandha results in a reduction in amyloid plaques and the improvement of the cognitive capability of the test subject after regular use for 30 days. However, unlike Brahmi, Ashwagandha does not affect the brain directly. Instead, studies show that it works by boosting a protein in the liver. Ultimately, the liver protein enters the blood system and clears amyloid in the brain [5]. The plant helps reduce the destruction of brain cells and reverse memory loss by clearing amyloid plaques. Importantly, Ashwagandha is a more potent antioxidant than most commercial antioxidants, including vitamin E and C. Its potent antioxidant capacity helps it scavenge some free radicals generated on the onset and throughout the progression of AD [7]. Such free radicals inhibit the brain cells, causing their death. Further, Ashwagandha helps increase the level of acetyl cholinesterase (AChE) in the brain cells. AChE is an important brain neurotransmitter related with memory and cognition [5]. Usually, AD reduces the level of AChE, thus impeding cognition and memory. Therefore, many treatments of AD try to increase the AChE level in the body. Notably, Ashwagandha and Brahmi are better AChE boosters than most conventional medications [7]. Moreover, Ashwagandha increases the energy level of a patient, thus enhancing the production of neurons and brain cells.



Fig 1: Brahmi (*Bacopa Monniera*)

Source: http://www.the-cma.org.uk/cma_images/Brahmi%20Bacopa_monnieri%20600.jpg



Fig 2: Ashwagandha (*Withania Somnifera*)

Source: http://www.archerfriendly.com/wp-content/uploads/IMG_3029b-640x530.jpg

Benefits of Herbal Medicine to Conventional Drugs

Unlike conventional drugs, herbal medicines such as Brahmi and Ashwagandha help boost one's energy level, increase nutrients, restore body cells, and enhance a person's immunity. In addition, they reduce blood sugars, cholesterol, and are anti-inflammatory. By providing the necessary nutrient, herbal medicines help restore the normal functions of the body. Further, herbal medicine helps remedy a problem instead of suppressing it. Moreover, most herbs have no severe side effects, unlike most conventional drugs. Therefore, herbs provide the body with vital nutrients and the energy required for daily functions without interfering with its natural immunity [5].

Benefits of Combining Brahmi and Ashwagandha

On their own, each of these herbal medicines can help fight Alzheimer. However, as most studies show, they can function better when taken together as a combination than they do if used separately [4]. Indeed, combining Ashwagandha and Brahmi can help the patient derive the combined benefits that each medicine would provide separately. Such a combination provides the body with many nutrient supplements and ensures fast healing. A combination of the two also provides a patient with the memory boosting capacity of Ashwagandha and memory and cognition enhancing capability of Brahmi. In addition, the energy boosting characteristic of Ashwagandha helps increase the immune level of a patient and results in the fast generation of new neurons and brain cells [1].

CONCLUSION

It is clear that both Brahmi and Ashwagandha have immense potential in managing the dreaded Alzheimer's disease when administered at an early stage. Clinical trials show that these herbal medicines can help improve memory and cognitive capacity of mice with Alzheimer. Each of the two herbal medicines has beneficial components that help improve memory and cognitive functions of an individual. Importantly, they can hasten the improvement and healing of a patient when used together. However, there is a need for further research to understand the side effects of using these herbs either separately or in combination. Nevertheless, the use of Brahmi and Ashwagandha promises to revolutionize the treatment of chronic diseases, especially AD.

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