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AN INVESTIGATION OF EFFECTIVENESS OF ALUMINIUM CHLORIDE INDUCED ALZHEIMER'S DISEASE IN VARIOUS EXPERIMENTAL RATS

P. Kishore*[1] and P. Kavitha[2]

[1*]Department of Pharmacognosy and Phytochemistry, Gokula Krishna College of Pharmacy, Sullurupet, Nellore, Andhra Pradesh, India.

[2]Department of Pharmaceutics, Gokula Krishna College of Pharmacy, Sullurupet, Nellore, Andhra Pradesh, India.

ABSTRACT

The Neuroprotective against $AlCl_3$ induced toxicity. Enhanced learning and memory was allied to ingestion of extract in rats. Al overload, AChE hyperactivity are responsible for alzheimers disease which are neutralized or reduced with treatment of extract, which might be due to the synergistic action of its active constituents. However extensive research is needed to validate the anti-alzheimeric effect of extract active components against a variety of models of AD, prior to entering into the clinical trials.

KEYWORDS

Anti-alzheimeric effect, $AlCl_3$ and AChE hyperactivity.

Author for Correspondence:

Kishore P,

Department of Pharmacognosy and Phytochemistry,

Gokula Krishna College of Pharmacy, Sullurupet,

Nellore, Andhra Pradesh, India.

Email: kirn1987@gmail.com

INTRODUCTION

As of 2020 globally, there were approximately 51 million people worldwide with Alzheimer's disease. It most often begins in people over 65 years of age, although up to 11% of cases are early-onset affecting those in their 30s to mid 60s. Women get sick more often than men. It affects about 6% of people 65 years and older[1]. In 2015, all forms of dementia resulted in about 1.9 million deaths.

Causes

Less than 1% of the time, Alzheimer's is caused by specific genetic changes that virtually guarantee a person will develop the disease.

Tests

A diagnostic work-up would likely include the following tests:

Physical and neurological exam

Your doctor will perform a physical exam and likely assess overall neurological health by testing the following:

Reflexes

Muscle tone and strength

Ability to get up from a chair and walk across the room

Sense of sight and hearing

Coordination

Balance

Brain imaging

Magnetic resonance imaging (MRI)

Computerized tomography (CT)

Imaging of disease processes can be performed with positron emission tomography (PET). During a PET scan, a low-level radioactive tracer is injected into the blood to reveal a particular feature in the brain. PET imaging may include the following:

Fluorodeoxyglucose (FDG) PET

Scans show areas of the brain in which nutrients are poorly metabolized. Identifying patterns of degeneration -areas of low metabolism -can help distinguish between Alzheimer's disease and other types of dementia.

Amyloid PET imaging

Can measure the burden of amyloid deposits in the brain. This imaging is primarily used in research but may be used if a person has unusual or very early onset of dementia symptoms.

Tau PET imaging

Which measures the burden of neurofibrillary tangles in the brain, is generally used in the research setting.

Description

Results obtained from water maze test demonstrated dependable lessen in the time required to find the platform. The aluminum treated rats showed high fluctuation in the time required to reach the platform from one day to another. The declining rate of the time needed to reach the platform was relatively steady for the control, standard and group treated with extracts. These out comes guide us to guesstimate that extract may exert its effect by means of managing the lessening rate of time. The fluctuation in the time required to find the platform showed by means of AlCl3 treated rats was lessened by means of the ingestion of PG. Suggesting that, although the effect of PG was not revealed by means of monitoring the time needed to find the platform, yet, it was demonstrated that PG effect was resulted to the waning rate in the time and reverting the fluctuation produced by means of AlCl3. A high correlation was found between the radial maze test and the avoidance response in PG treated groups. The correlations specify that both radial arm maze and active avoidance test possibly will assess memory dispensation in a definite region of rat's brain. As a part of model of active avoidance (AA), demonstrated 2-fold lessening correct reactions from the 7^{th} to the 21^{st} day of assessment in AlCl3-treated animals as compared with the group of control.

Aluminium provoke stable and reproducible depression of AA response, meaning, Al damages rat cognitive functioning. These consequences, all along with the obtained decreased AchE activity suggest that Al exerts its toxic effects by altering transmission of cholinergic eventually imitated in neurobehavioral deficits. Aluminium is not only a selective cholinergic neurotoxin and possibly will also affect non cholinergic neurons concerned in spatial learning. Earlier studies have exposed that attention and spatial learning were disturb in the Al-treated rats.

CONCLUSION

The Neuroprotective against $AlCl_3$ induced toxicity. Enhanced learning and memory was allied to ingestion of extract in rats. Al overload, AChE hyperactivity are responsible for alzheimers disease which are neutralized or reduced with treatment of extract, which might be due to the synergistic action of its active constituents. However extensive research is needed to validate the anti-alzheimeric effect of extract active components against a variety

of models of AD, prior to entering into the clinical trials.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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