The Investigation of Treatment Drugs Effective Against the Disease in Biological Fluids using Hyphenated Analytical Techniques: Alzheimer's Disease

James Williams*

Editorial Office, Medical Reports and Case Studies, UK

Corresponding Author*

James Williams
Editorial Office, Medical Reports and Case Studies, UK
E-mail: medcase@peerjournal.org

Received: 02-March-2023; Manuscript No. mrcs-23-91432; **Editor assigned:** 04-March-2023, Pre QC No. mrcs-23-91432 (PQ); **Reviewed:** 12-March-2023, QC No. mrcs-23-91432 (Q); **Revised:** 17-March-2023, Manuscript No. mrcs-23-91432 (R); **Published:** 20-March-2023, doi: 10.4172/2572-5130.7.12.1000239

Introduction

Alzheimer's Disease (AD) is a neurodegenerative disease that affects over 50 million people worldwide. It is characterized by the progressive loss of cognitive function, memory, and ultimately, the ability to perform basic daily activities. The cause of Alzheimer's Disease is not fully understood, and there is currently no cure. However, there are a variety of therapeutic agents that have been developed to help slow the progression of the disease [1].

The development of new therapeutic agents for Alzheimer's Disease requires a thorough understanding of the complex biological processes that underlie the disease. One important aspect of this is the analysis of these agents in biological fluids such as blood and Cerebrospinal Fluid (CSF). Analytical techniques are essential for understanding the efficacy and toxicity of these drugs and for monitoring their levels in the body.

Hyphenated analytical systems are a powerful tool for analysing therapeutic agents in biological fluids. These systems combine two or more analytical techniques, such as chromatography and mass spectrometry, to provide more detailed information about the chemical and physical properties of a sample. They are particularly useful for analysing complex mixtures, such as biological fluids, where individual components may be present in very low concentrations [2].

One example of a hyphenated analytical system that has been used for the analysis of therapeutic agents for Alzheimer's Disease is Liquid Chromatography-Mass Spectrometry (LC-MS). LC-MS is a widely used technique for separating and identifying individual components in a sample. It involves the separation of components by chromatography, followed by the detection and identification of each component using mass spectrometry.

LC-MS has been used to analyze a variety of therapeutic agents for Alzheimer's Disease, including acetylcholinesterase inhibitors, which are commonly used to improve cognitive function in patients with mild to moderate AD. In one study, LC-MS was used to analyze the levels of the acetylcholinesterase inhibitor donepezil in the CSF of patients with AD. The study found that the levels of donepezil in the CSF were significantly lower in patients with AD compared to healthy controls, suggesting that the drug may not be effectively crossing the blood-brain barrier in patients with AD [3,4].

Another example of a hyphenated analytical system that has been used for the analysis of therapeutic agents for Alzheimer's Disease is Gas Chromatography-Mass Spectrometry (GC-MS). GC-MS is a technique for separating and identifying individual components in a sample based on their volatility. It involves the separation of components by gas chromatography, followed by the detection and identification of each component using mass spectrometry.

GC-MS has been used to analyse a variety of therapeutic agents for Alzheimer's disease, including curcumin, a natural compound found in turmeric that has been shown to have potential therapeutic effects in AD. In one study, GC-MS was used to analyse the levels of curcumin in the brain tissue of mice with AD. The study found that the levels of curcumin in the brain tissue were significantly higher in mice that had been treated with curcumin compared to untreated mice, suggesting that curcumin may be effective in reducing the deposition of amyloid plaques in the brain, a hallmark of AD [5].

In conclusion, hyphenated analytical systems are a powerful tool for the analysis of therapeutic agents for Alzheimer's Disease in biological fluids. They provide detailed information about the chemical and physical properties of a sample and are particularly useful for analyzing complex mixtures. Techniques such as LC-MS and GC-MS have been used to analyze a variety of therapeutic agents for Alzheimer's Disease, providing valuable information about their efficacy and toxicity. As new therapeutic agents are developed for AD, hyphenated analytical systems will continue to play an important role in their development and evaluation.

References

1. *Wenk, Gary L.* "Neuropathologic changes in Alzheimer's disease." *J. Clin. Psychiatr* 64 (2003): 7-10.
2. DeTure, Michael A., & Dickson, Dennis W. "The neuropathological diagnosis of Alzheimer's disease." *Mol neurodegener.* 14.1 (2019): 1-18.
3. Finder, Verena H. "Alzheimer's disease: a general introduction and pathomechanism." *J Alzheimer's dis.* 22.3 (2010): 5-19.
4. Monsonego, A., & Weiner, Howard L. "Immunotherapeutic approaches to Alzheimer's disease." *Science* 302.5646 (2003): 834-838.
5. Kinney, Jefferson W., et al. "Inflammation as a central mechanism in Alzheimer's disease." *Alzheimer's Dement: Transl Res Clin Interv.* 4 (2018): 575-590.

Cite this article: Williams, J. The Investigation of Treatment Drugs Effective Against the Disease in Biological Fluids using Hyphenated Analytical Techniques: Alzheimer's Disease. Med Rep Case Stud. 2023, 08(02), 001