ROLE AND THERAPEUTIC POTENTIAL OF miRNAs TARGETING BACE-1 OR TAU IN ALZHEIMER DISEASE.

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INTRODUCTION

First described in 1993 by Ambros and colleagues, miRNAs are 21-23 nucleotide-long non-coding RNAs, which have been found to be crucial for proper gene regulation, usually at a post-transcriptional level. Since their discovery back in 1993, and hitherto numerous miRNAs have been reported to be essential for proper CNS development and function maintenance. Consequently, their deregulation may lead to neuronal dysfunction and therefore promote the initiation and/or progression of neurological disorders. (Ambros, 2014.) Alzheimer Disease (AD) is a chronic neurodegenerative disease which represents the most habitual cause of dementia in the US and Europe. Its main molecular hallmarks are the following two presence of amyloid plaques (also known as senile plaques) principally composed of A40 and A42 peptides, and neurofibrillary tangles (NFTs) mainly consisting of hyperphosphorylated tau protein (Amman et al., 2015).

In this review, my main aims are the following ones:

1. Their discovery back in 1993 and hitherto numerous miRNAs have been reported to be essential for proper CNS development and function maintenance. Consequently, their deregulation may lead to neuronal dysfunction and therefore promote the initiation and/or progression of neurological disorders. (Ambros, 2014.)
2. Additionally, some of these miRNAs are commonly found deregulated in AD patients. Additionally, all of these have been associated with spinal transport, spatial learning and memory; thus reinforcing the idea of miRNAs both tau and BACE-1 epigenetic deregulation in contributing to AD progression.

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BACE-1

**MiR-188-3p, which targets BACE-1, is downregulated in AD patients.**

![Image](https://example.com/image1.png)

**MiR-188-3p** overexpression significantly improves spatial memory and reduces tau phosphorylation.

![Image](https://example.com/image2.png)

**TAU**

Several miRNAs targeting either BACE-1 or tau mRNA, among other miRNAs, are commonly found deregulated in AD patients. Additionally, some of these have been associated with spinal transport, spatial learning and memory; thus reinforcing the idea of miRNAs both tau and BACE-1 epigenetic deregulation in contributing to AD progression.

**TAKE-HOME MESSAGE**

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**METHODS**

In conclusion, in first place relevant articles were searched on the databases of the NCTR as well as Nature Publications. Second, I thoroughly read the abstracts and summarized the important information on final files. I subsequently proceeded to write the review and select the relevant figures in order to render it more intelligible.

Finally, the poster was designed and new figures were built to help understand the relevant information displayed.

**REFERENCES**
