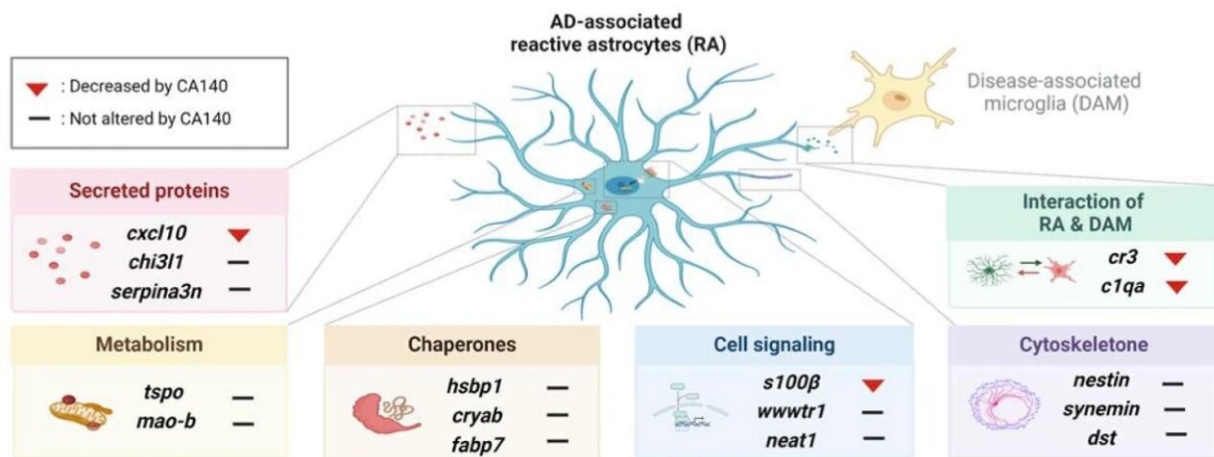


# New study reveals dopamine analog CA140 mitigates Alzheimer's disease pathology

August 22 2024, by JooHyeon Heo



Summary illustration of the regulatory effect of CA140 on reactive astrogliosis in PACs from 5xFAD mice. Credit: *Journal of Neuroinflammation* (2024). DOI: 10.1186/s12974-024-03180-x

The small molecule dopamine analog (DA) CA140, which binds to Amyloid-β (Aβ), presents new possibilities for the treatment of degenerative brain diseases.

Professor Jae-Ick Kim and his research team in the Department of Biological Sciences at UNIST, in collaboration with a team led by Director Hyang-Sook Hoe at the Korea Brain Research Institute (KBRI), has demonstrated that the newly synthesized compound CA140 alleviates

symptoms of Alzheimer's [disease](#) (AD). The paper is [published](#) in the *Journal of Neuroinflammation*.

Dopamine is a key neurotransmitter involved in various [brain](#) functions, including [motor control](#), cognition, and memory, and has recently garnered attention for its role in Alzheimer's disease.

In the brains of individuals with AD, both functional abnormalities and changes in the expression levels of [dopamine](#) receptors DRD1 and DRD2 have been observed. Studies indicate that administering a dopamine precursor can partially improve synaptic function and [cognitive abilities](#).

The research team confirmed that the administration of the DA analog CA140 to a model of AD resulted in a reduction of A $\beta$  accumulation and tau protein aggregation, which are major contributors to AD pathology. Furthermore, CA140 administration alleviated neuroinflammation associated with the disease and restored synaptic function, plasticity, and [memory loss](#).

CA140 has been shown to enhance neuronal function and memory in both normal animal models and those with cognitive impairments. The research team hypothesizes that CA140 operates through the dopamine receptor DRD1 to improve memory and alleviate symptoms of Alzheimer's disease.

Professor Kim stated, "We have confirmed the potential for DA analogs to significantly impact the treatment of not only Parkinson's disease, but also Alzheimer's disease." He added, "We hope that CA140 can serve as a foundational technology for developing new treatments for degenerative brain diseases, including Alzheimer's."

Researcher Ha-Eun Lee noted, "It is highly significant that CA140

demonstrates the ability to ameliorate the disease in Alzheimer's animal models, particularly through its effects on synaptic plasticity. We aspire to contribute to the development of innovative treatments for degenerative brain diseases through this research."

**More information:** Sehyun Chae et al, The dopamine analogue CA140 alleviates AD pathology, neuroinflammation, and rescues synaptic/cognitive functions by modulating DRD1 signaling or directly binding to Abeta, *Journal of Neuroinflammation* (2024). [DOI: 10.1186/s12974-024-03180-x](https://doi.org/10.1186/s12974-024-03180-x)

Provided by Ulsan National Institute of Science and Technology

Citation: New study reveals dopamine analog CA140 mitigates Alzheimer's disease pathology (2024, August 22) retrieved 31 August 2024 from <https://medicalxpress.com/news/2024-08-reveals-dopamine-analog-ca140-mitigates.html>

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