

**APC-100, a novel pharmaceutical neuroregeneration therapy for the Alzheimer's disease****Kiminobu Sugaya**

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One of the primary hurdles of Alzheimer's disease (AD) therapy is that it requires more than one solution to successfully stop or reverse it since the disease degenerates many different types of cells as compared to the other neurodegenerative diseases. That is why stem cells could be useful to treat AD since they could produce those different types of cells according to the environments. However, to use stem cells, influences from the pathological environment of AD must be addressed. The AD brain overproduces amyloid precursor protein (APP), which then results in amyloid plaques, one of the hallmarks of AD. We found that the pathological level of APP prevents neural stem cells (NSCs) to differentiate into neurons. Our approach is to combine small molecule

therapeutics for both modifying the pathological condition of AD and increasing endogenous NSCs. With phenserine, a drug that reduces APP production, we were able to control the APP to a normal level, which allows NSCs to differentiate into neurons. Then we combined KS-217, a pyro pyrimidine derivative, which passes through the blood brain barrier to increase endogenous NSCs at a significant level, eliminating the need for NSC transplantation. This combination therapeutic approach (APC-100) has proven effective in improving cognition and increasing neuroregeneration in AD mouse models. APC-100 will introduce a totally new concept to AD stem cell therapy, which does not require any transplantable cell materials.

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