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Targeting tau kinases against Alzheimer's disease: Example of 3 newly identified GSK3 inhibitors (6-BIBEO, 6-BIDECO and 6-BIMYEO)

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Alzheimer's disease (AD) is characterized by the presence of tau hyperphosphorylated aggregates and a neuronal loss. Kinases overactivation has been proposed to be mainly involved in the abnormal tau phosphorylation and aggregation observed in AD. Consequently, targeting tau kinases represents a promising therapeutic strategy for AD.

Inhibition of the major tau protein kinase: Glycogen Synthase Kinase-3 (GSK3) is a possible and specific intervention that could block tau phosphorylation and neuronal apoptosis.

In this study, we identify three newly characterized indirubin derivative inhibitors of GSK3 (6-BIBEO, 6-BIDECO and 6-BIMYEO) which abrogate tau hyperphosphorylation and neuronal apoptosis. Their abilities to cross the blood brain barrier and their absence of cytotoxicity make them hopeful therapeutic compounds.

To conclude, we compare their efficiencies to reveal which one constitutes the most interesting therapeutic compound against neurodegenerative diseases like AD.

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