

# Synthesis and characterization of indole ligands as potential pharmaceuticals to neurodegenerative disorders

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Alzheimer's disease (AD) is a neurodegenerative illness which affects many people in the world, causing intellectual and physical disturbances, and leading to dementia, mainly in elder people<sup>1</sup>. The amyloid cascade hypothesis has been described as one of the precursors for the AD, suggesting that the deposition of amyloid  $\beta$ -peptide senile plaques and aggregates is the responsible for its neurotoxicity<sup>2</sup>. As the complete diagnosis for the AD can be only obtained *post mortem*, the development of new strategies is desired, such as the usage of molecular markers, and inhibitors of fibrils and plaques formation. The present study aims to investigate the mechanism of interaction between some Schiff base ligands and the peptide  $\beta$ -amyloid. Therefore, indole derivatives such as **inen**, 2-[(*E*)-[(1*H*-indol-2-yl)methylidene]amino]ethan-1-amine and **isahbt**, (3*Z*)-3-[2-(1,3-benzothiazol-2-yl)hydrazinylidene]-1,3-dihydro-2*H*-indol-2-one (Figure 1), were designed and synthesized, and its ability to inhibit the aggregation of amyloid peptides, via competitive metal-coordination were verified. Compounds are being characterized by FT-IR (*inen*, KBr pellet:  $\nu(\text{cm}^{-1})$ , 3308 (s, N-H amine), 1633 (s, C=N non-aromatic), 1441(m, C=C aromatic), 1321(m, C-N aromatic), 1125(w, amine); *isahbt*, KBr pellet:  $\nu(\text{cm}^{-1})$ , 3145 (s, N-H amine), 1698 (s, C=O amide), 1607 (s, N-H amine), 1522 (s, C=N cyclic imine), 1451 (s, C=C aromatic)); UV/Vis (in DMSO sol.): *inen*,  $\lambda/\text{nm}$  ( $\epsilon$ ), 325, (3080) and for *isahbt*, 275, (3385) and 460, (5227); elemental analysis (CHN) and NMR (in progress). In addition, enzymatic assays of acetylcholinesterase enzyme (AChE) inhibition will be studied, as a possible target. It has been reported that AD leads to accumulation of acetylcholine, an important neurotransmitter responsible for several cholinergic sinapses<sup>3</sup>. Novel diagnosis and therapeutic agents shall contribute for the treatment of AD, including social and medical issues.

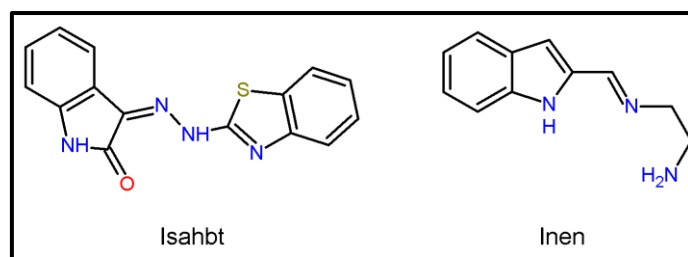


Fig. 1: Indole-Schiff base ligands, *isahbt* and *inen*, studied.

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