



***bis*-Acting Galanthamine Derivatives as Improved Drugs in the Symptomatic Treatment of Alzheimer's Disease**

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The alkaloid galanthamine (GAL), isolated from the *Amaryllidaceae* family of plants, shows strong, reversible anticholinesterase activity. As such it has been tested as a possible alternative to current anticholinesterases such as Aricept[®], used in the palliative treatment of Alzheimer's Disease. GAL is already in use in Austria and has been approved for use in the UK and the USA, under the trade name Reminyl[®]. It interacts with several residues in the active site of acetylcholinesterase (AChE) at the bottom of the "gorge",

including Trp84, which binds the quaternary ammonium group of acetylcholine. In an effort to improve the efficacy of this drug, derivatives have been synthesized with the aim of interacting with both the active site and the second cation-binding site at the top of the gorge of AChE, *viz.*, the peripheral binding site. The crystal structures of complexes of three such compounds with *Torpedo californica* AChE have been solved and refined and will be presented.