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## New peptide derivatives of galantamine with potential activity against Alzheimer type dementia

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**Methodology and Theoretical Orientation:** The main feature of dementia and Alzheimer's disease (AD) is cholinergic deficit and cognitive impairment. Galantamine (Gal) is competitive and reversible acetylcholine esterase (AChE) inhibitor. New Gal derivatives (GalD) were designed to be more effective in AD treatment. We examined effects of four selected galantamine derivatives (codes 34, 43, 44 and 46) on learning and memory processes and their brain AChE inhibitory activity in vivo. Male ICR mice (18-20 g) were used. The experimental groups received one of the four new Galantamine derivatives in doses 1/20 of LD50 (50 mg/kg, i.p, for 8 days). Controls received same volume saline (0.1 ml/b.w., i.p). On the 1st, 5th and 8th day after daily treatment all groups were subjected to behavioral test (step trough test), evaluating changes in the memory performance. Dynamic of changes in AChE activity was measured in brain homogenates on the 1st, 5th and 8th day using colorimetric method.

**Findings:** Our results showed that four selected GalD improved memory performance in animals, comparable with the effect of Gal as referent. The best are their effects on 5th day. We found also that the four compounds have significant AChE inhibitory activity in vivo. More pronounced was the inhibitory effect of compounds on brain AChE activity on the 1st and on the 5th day. On

the 8th day their inhibitory effect decreased and even disappeared (in 44- and 46-treated group). Only GalD 43 continued to keep significantly its AChE inhibitory effect even on the 8th day (by 37%).

**Conclusion and Significance:** We consider that four newly synthesized GalD are promising AChE inhibitors better than Gal and deserve to be investigated further on animals model of AD.

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### Biography

Lyubka Tancheva is an associated professor at the Institute of Neurobiology, Bulgarian Academy of Sciences and also is working as Weston Professor of Weizmann Institute of Science, Rehovot, Israel. Her research interests are in the field of pharmacological treatment of cognitive disorders with natural and synthetic compounds. She is working on the complex mechanisms of neurodegenerative disorders and the possibilities for their prevention. Tancheva is a co-author of several guidebooks & educational materials for students in Medicine and Pharmacy. She also is supervisor of many Master and PhD students..

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