Synthesis of 6-tetrazolyl substituted azocino[5,4-*b*]indoles

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The development of effective methods for the synthesis of original bioactive compounds on the basis of domino- and multi-component processes is a challenging task of synthetic and pharmaceutical chemistry.

A number of multi-component reactions, for example azido-variant Ugi reaction, proceeds via formation iminium intermediates. The stable cyclic iminium salts could be successfully used to develop new domino-processes.

Such a process was previously implemented for dihydroisoquinolinium salt generated from cotarnine chloride. Tetrazolyl substituted isoquinolines were obtained in high yields [1]. However this reaction was studied only in the case of isoquinoline salt without any substituents attached to the position 1. Salts of 3,4-dihydro-*β*-carbolines **1** were not considered.

3,4-Dihydro-*β*-carbolinium salts are attractive compounds for the three-component Ugi azido-reaction. From these reactions we isolated 1-tetrazolyl substituted *β*-carbolines **2** in good yields (69-81%), under the action of alkynes with electron-withdrawing groups the obtained compounds **2** formed azocino[5,4-*b*]indoles **3** – the products of enlargement of tetrahydropyridine ring to tetrahydroazocine one.

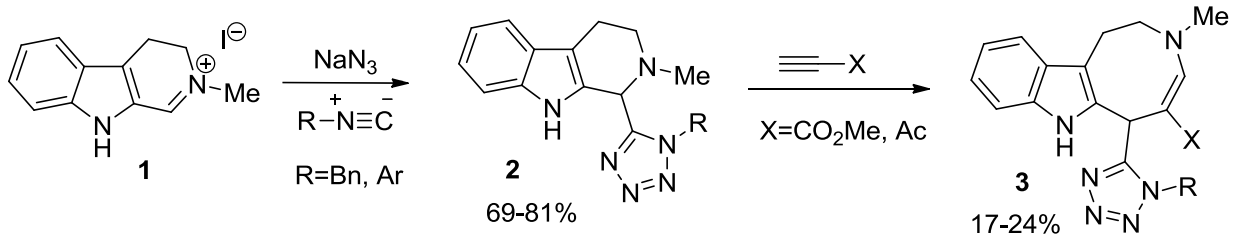

Fig. 1. Synthesys of 6-tetrazolyl substituted azocino[5,4-b]indoles

It was shown that azocines possess high AChE and BchE inhibitory activities [2] and may be of interest as potential drugs for the treatment of Alzheimer's disease. In the near future we are planning to measure AChE and BChE inhibitory activities for the all 6-tetrazolyl substituted azocino[5,4-*b*]indoles **3** synthesized in the framework of this study.

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References

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[2] Carotti, A.; M. De Candia; Catto, M.; Borisova T.N.; Varlamov, A.V.; Mendez-Alvares, E.; Soto-Ofero R.; Voskressensky L.G.; Altomare, C. *Bioorganic & Medicinal Chem.*, **2006**, *14*, 7205.