PO-16

MICROWAVE-ASSISTED CYCLIZATION REACTIONS

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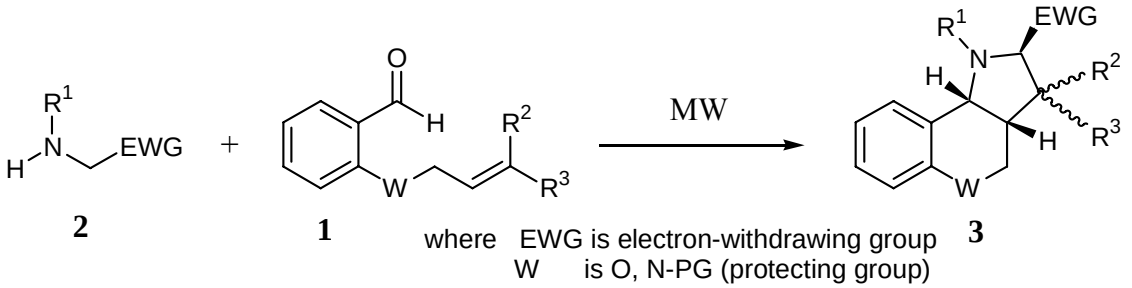
In the literature there are many reaction concerning of the cyclization reactions. But those initiated by microwaves are not so frequent. In our research we concentrated mostly on the intramolecular cyclizations and especially those based on general principle of the 1,3-dipolar cycloaddition reactions. The 1,3-dipole is generated by different methods in the reaction mixture and that is then taking part in the reaction with a dipolarophile under formation of five-membered ring [1]. Only some of the reactions are microwave initiated reactions [2].
Already mentioned reactions of the intramolecular type are in the literature even less frequent and represent a source for synthesis of fused heterocyclic systems. Microwaves on azomethine ylides were used only ones [3]. Besides reactions with azomethine ylides we tried also to generate *in situ* nitrones for the subsequent intramolecular reaction.
We paid main attention in our work to preparation of fused hexahydrochromeno[4,3-*b*] pyrroles and hexahydropyrrolo[3,2-c]quinoline skeleton **3** (Scheme 1). Such a structural motive was found in several naturally occurring alkaloids [4-6] and even hexahydrochromeno[4,3-*b*]pyrroles show interesting biological properties [7].



Scheme 1.

Finally, lot of effort was devoted to the application already developed method for *in situ* nitrone generation and its intramolecular cyclization to fused isoxazoles. Nevertheless the best achieved yield with MW when the conditions of the reaction were many times varied was about 16 % only.

References

[1] Padwa A.: *1,3-Dipolar Cycloaddition Chemistry*, Wiley, New York, **1984**, Vol.1 + 2
[2] Loupy A., Hamelin J., Petit A., Texier-Bullet F., Jacquault P., Mathe D.: *Synthesis* **1998**, 1213.
[3] Cheng Q., Zhang W., Tagami Y., Oritani T.: *J. Chem. Soc., Perkin Trans. 1,* **2001**, 452.
[4] P. N. Confalone, E. M. Huie, *J. Am. Chem. Soc.* **1984**, *106*, 7178.
[5] C.J. Lovely a H. Mahmud: *Tetrahedron Lett.* **1999**, *40*, 2079.
[6] H. Mahmud, C.J. Lovely, H.V. Rasika Dias: *Tetrahedron* **2001**, *57*, 4095.
[7] M. Rosini, R. Budresi, M.G. Bixel, M.L. Bolognesi, A. Chiarini, F. Hucho, P. Krogsgaard-Larsen, I.R. Povl, A. Minardi, V. Tumiatti, P.N.R. Usherwood, C. Melichiorre: *J. Med. Chem.* **1999**, *42*, 5212.