New δ-Carboline Systems through T-Reactions

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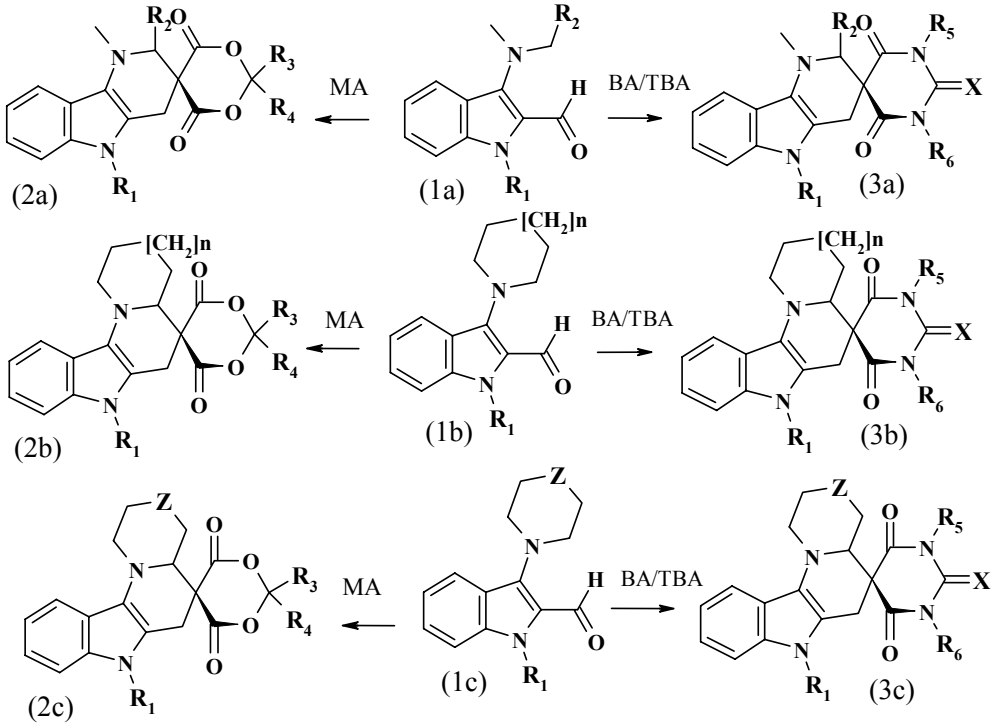
For the first time, the T-reactions (the term was suggested by the authors for heterocyclizations based on the *o-tert*-amino effect [1–3]) of 3-amino-2-formylindoles **1a**–**c** with barbituric (BA), thiobarbituric (TBA), and Meldrum (MA) acids were found to produce new 3-spiro-δ-carboline systems **2a**–**c**, **3a**–**c** in 40–75% yield (reflux in polar solvents for 2–10 h).



R_1= Ac, Alk, Ar; R_2 = Alk, Ar; R_3,R_4 = Alk, Ar, $(CH_2)_4$, $(CH_2)_5$;
R_5, R_6 = H, Alk, Ar, Het; X = O, S; Z = NR_1, O, S; *n* = $(CH_2)_{0,1,2}$;

The T-reactions of asymmetric BA and TBA were found to yield a mixture of diastereomeric T-products, their relative amount depending on reaction conditions. The structure of synthesized compounds was confirmed by IR, ^{1}H NMR, ^{13}C NMR, and mass spectra.

[1] Krasnov K.A., Kartsev V.G., *Tertahedron Lett.* 2004, submitted.
[2] Krasnov K.A., in *Selected Methods for Synthesis and Modification of Heterocycles* (edited by V.G. Kartsev), Moscow: IBS Press, 2002, vol. 1. p. 280.
[3] Krasnov K.A., Kartsev V.G., Khrustalev V.N., *Russ. Chem. Bull.* 2002, Vol. 51, p. 1540.