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Three-component reaction between alkyl (aryl) isocyanides and dialkyl acetylenedicarboxylates in the presence of ethyl trifluoroacetate: one-pot synthesis of functionalized dialkyl 5-[alkyl(aryl)imino]-2-ethoxy-2-(trifluoromethyl)-2,5-dihydrofuran-3,4-dicarboxylate

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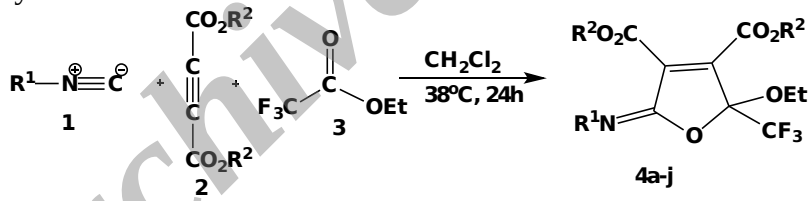
The development of new and simple synthetic approaches for fully used organic compounds from readily available reagents is one of the major aims in organic synthesis [1]. The multicomponent reactions (MCRs), by virtue of their convergence, productivity, facile execution and generally high yields of products, have attracted much attention from the vantage point of synthetic chemistry [2, 3]. In particular, isocyanide-based multicomponent reactions apply to the synthesis of various furan and furan derivatives [4, 5].We now report the result of our investigations for the reaction between alkyl (aryl) isocyanides **1** and dialkyl acetylenedicarboxylates **2** in the presence of ethyl trifluoroacetate **3** in refluxing CH_2Cl_2. The one-pot three-component condensation reaction was proceeded at 38ºC and completed after 24h to afford dialkyl 5-[alkyl(aryl)imino]-2-ethoxy-2-(trifluoromethyl)-2,5-dihydrofuran-3,4-dicarboxylate **4** in good isolated yields in the absence of a catalyst. The structure of compounds **4a-j** was deduced from their IR, ^{1}H NMR, ^{13}C NMR, ^{19}F NMR, mass spectral data and elemental analysis. The present procedure has the advantage that not only the reaction is performed under neutral conditions but also the reactants can be mixed without any activation or modification.



1	R^1
a	Cyclohexyl
b	*Tert*-butyl
c	2,6-Dimethylphenyl
d	Benzyl

2	R^2
a	Me
b	Et
c	*t*-Bu

4	R^1	R^2	Yield(%)
a	Cyclohexyl	Me	89
b	Cyclohexyl	Et	94
c	Cyclohexyl	*t*-Bu	85
d	*Tert*-butyl	Me	90
e	*Tert*-butyl	Et	92
f	*Tert*-butyl	*t*-Bu	89
g	2,6-Dimethyl phenyl	Me	90
h	2,6-Dimethyl phenyl	Et	94
i	2,6-Dimethyl phenyl	*t*-Bu	88
j	Benzyl	Me	92

References

[1] R. M. Acheson and N. F. Elmore, *Adv. Heterocycl. Chem*; Kyoto, **1978**, *23*, 263.
[2] R. V. A. Orru and M. Greef, *Synthesis*., **2003**, 1471-1499.
[3] A. Domling and I. Ugi, *Angew. Chem., Int. Ed*., **2000**, *39*, 3168.
[4] M. B. Teimouri and F. *J.* Mansouri, *Comb. Chem*., **2008**, *10*, 507.
[5] I. Yavari, A. Mokhtarporyani-Sanandaj, L. Moradi and A. Mirzaei, *Tetrahedron*.,