**New examples of the application of the Michael’s reaction in a series of nitrogen-containing heterocycles**

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The Michael reaction has been used widely in organic synthesis for its C–C bond-forming ability. Conjugate addition of nitoalkyl group to electron deficient olefins is a highly useful reaction as basic strategy for organic synthesis, including the synthesis of polyfunctional heterocyclic compounds.

Previously was found that 3-nitromethylpyrazolidine **1** is the useful donor toward Michael addition, but the synthetic application this compound as nitronate anion have been limited a few examples [1].

Here we present synthetic utility of **1** by Michael reaction with vinyl pyridine, acrylamide and acetylenedicarboxylic acid (**Scheme 1**) it turns out that the reaction **1** with conjugated olefin proceeds best of all at room temperature on basic aluminum oxide containing 20% adsorbed KF.



**Scheme 1**

The structure of all obtained compounds was confirmed by data of IR, 1H NMR, and mass spectroscopy.

Thus there are possible to synthesize new polyfunctional derivatives of pyrazolidines from nitromethyl pyrazolidines by their further functionalization.

**References**

[1] L. A. Sviridova, G. A. Golubeva, S. V. Shorunov *Chem. Heterocycl. Comp*. 42(*9*), 1185, 2006

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