Reinvestigation of the Thiazole Synthesis with Ethyl 3-Amino-2-[5-aryl-1,3,4-oxadiazol-2(3H)-ylidene]-3-thioxopropanoates and Related Reactions

Nico Paepke\textsuperscript{a,b}, Helmut Reinke\textsuperscript{a}, Klaus Peseke\textsuperscript{a}, and Christian Vogel\textsuperscript{a}

\textsuperscript{a} Department of Organic Chemistry, Institute of Chemistry, University of Rostock, Albert-Einstein-Straße 3a, 18059 Rostock, Germany
\textsuperscript{b} Current address: Schreiner Group GmbH & Co. KG, Bruckmannring 22, 85764 Oberschleißheim, Germany

Reprint requests to Prof. Dr. Christian Vogel. Fax: +49-381-498-6412.
E-mail: christian.vogel@uni-rostock.de

Z. Naturforsch. 2009, 64b, 719–726; received April 21, 2009

\textit{Dedicated with great appreciation to Professor Gerhard Maas on the occasion of his 60\textsuperscript{th} birthday}

Treatment of the 1,3,4-oxadiazoles 3\textsuperscript{a} and 3\textsuperscript{b} with 3-chloropentane-2,4-dione gave the thiazoles 4\textsuperscript{a} and 4\textsuperscript{b}, respectively, which were methylated to furnish compounds 5\textsuperscript{a} and 5\textsuperscript{b}. The formation of 1,3,4-oxadiazoles using the 1,3-dithietane 1 as starting material, and the consecutive reactions mentioned above were transferred into sugar chemistry to provide the corresponding derivatives 6–9 in good yields. The reaction of 5\textsuperscript{a} with benzyl amine, ethylene diamine and \textit{o}-phenylene diamine afforded compounds 10, 11, and 12, respectively, which possess better stabilized \textit{push-pull} systems than 5\textsuperscript{a}. The structures of 3\textsuperscript{a}, 4\textsuperscript{a}, 5\textsuperscript{a}, 10, 11, and 12 were compared with the previously proposed structures I–VI, respectively. The structures of compounds 1, 3\textsuperscript{b}, and 11 were confirmed by X-ray diffraction studies.

\textit{Key words:} Diethyl (1,3-Dithietane-2,4-diylidene)bis(2-cyanoacetate), \textit{Push-pull} Chemistry, Hydrogen Sulfide Migration, Consecutive Ring Closure Reaction, Structural Reinvestigation