

Reaction of 4,4'-bis(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-3,3'-dimethoxydiphenylmethane with 2-furylmethanol

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Abstract

The reaction of 4,4'-bis(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-3,3'-dimethoxydiphenylmethane with 2-furylmethanol is described. The relevance of the study is due to the fact that 2,5-dihydropyrrole-2,5-diones (maleic acid imides), due to the presence of a highly active double bond, readily enter polymerization and copolymerization reactions with various unsaturated monomers, various nucleophilic and electrophilic reagents are attached, participate in a number of cycloaddition reactions, as well as substitution. Along with this many maleimide derivatives have biological activity. Thus they are widely used in agriculture as pesticides, because they exhibit high insecticidal, fungicidal and herbicidal activities. Maleimides are also proposed as highly effective pharmaceutical preparations for the treatment of a number of diseases, including cardiovascular diseases, Alzheimer's disease, type 2 diabetes, cancer and HIV. The starting 4,4'-bis(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-3,3'-dimethoxydiphenylmethane was synthesized by a two-step methodic method based on 4,4'-methylene-bis-(*o*-anisidine). Firstly, 4,4'-bis[*N*-(2-carboxyethenyl)carbamoyl]-3,3'-dimethoxydiphenyl-methane was prepared by reacting diamine with maleic anhydride in a molar ratio of 2: 1 in acetone, which under heating with acetic anhydride in the presence of anhydrous sodium acetate undergoes intramolecular cleavage of water with the formation of diimide. Reactions of 4,4'-bis(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-3,3'-dimethoxydiphenylmethane with 2-furylmethanol were carried out at a molar ratio of reagents 1 : 1 and 1:2 at room temperature. Absolute 1,4-dioxane was used as the solvent. The progress of the reactions was monitored by thin layer chromatography. IR and ¹H NMR spectroscopy showed that the reactions proceed according to the scheme of [4+2]-cycloaddition and lead to the formation of mono- or bis-adducts of diene synthesis. The phenomenon of induced fluorescence for synthesized adducts was revealed.

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- REACTION OF 4,4'-BIS (2,5-DIHYDRO-2,5-DIOXO-1H-PYRROL-1-YL)-3,3'-DIMETHOXYDIPHENYLMETHANE... __ 50-55 triazoles. *Butlerov Communications*. **2016**. Vol.45. No.3. P.6-10. ROI: jbc-02/16-45-3-6
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