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SYNTHESIS AND PROPERTIES OF TEMPO-SUBSTITUTED GLYCIDILMETHACRYLATE COPOLYMERS

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We reported in [1] for the preparation of an ultrafiltration PAN-membrane from the poly(acrylonitrile-co-glycidilmethacrylate) and immobilization of glucose oxidase.
This work presents the synthesis of new functional TEMPO-substituted copolymers of glycidilmethacrylate (GMA). The copolymerization of GMA with acrylonitrile (AN) and or N-vinylpyrrolidone (VP) were investigated in benzene, presend AIBN as an initiator at 70oC. The monomer reactivity ratios were determined by computer program Kelen-Tudos method as follows: r1=0,65, r2=0,25 for GMA-AN system and r1=2,33, r2=0,08 for GMA-VP system.

The polymeranalogous reaction of the GMA-copolymers, containing epoxyde functional groups, with 4-amino-2,2,6,6-tetramethylpiperidine-N-oxyl (A-TEMPO) were investigated in DMF at 60oC: where R is: 1-nitrile group; 2-N-pyrrolidone cycle.
The structure of resulted spin-labeled functional copolymers were determined by NMR, FT-IR and ESR. The ESR-spectra of 1 and 2 copolymers show characteristic triplet signals to the nitroxyl radicals g=2,0025.
The phisiological activity and antioxidative potency of TEMPO-substituted copolymer 1 and 2 were examined in vitro.