Synthesis and application of some activated monomers

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In the present work, methacrylic ester of of N-(2-hydroxyethyl)phthalimide (NHEP) were synthesized andpolymerized. The synthesis of 2-(N-phthalimido) ethylmethacrylate (PEMA) monomer was prepared in a Fair yield bythe reaction of methacryloyl chloride with N-(2-hydroxyethyl)phthalimide (NHEP) in presence of triethylamine. Also, PEMAwas prepared by the reaction of N-(2-hydroxyethyl) phthalimide(NHEP) with methacrylic acid in the presence of N,NDicyclohexylcarbodiimide(DCCI).The prepared monomer wascollected and polymerized by solution polymerization and thepolymer was collected by filteration.The ability of poly-2-(N-phthalimido) ethyl methacrylate(PEMA) to enter into an exchange reaction with amines was testedwith amines (ethylamine, pipridine, p-anisidine) and hydroxylatedcompounds (phenol, p-hydroxy benzoic acid, salycilic acid andcyclohexanol).And precent exchange reactions were almostqunantitative as indicated by elemental and spectroscophtotometricanalysis. -And precent exchange was found to be :(92,43, 54) for ethyl amine, pipridine, p anisidine and was found toSUMMARYiiibe :(62.825, 100, 37.2922, 58.77) for phenol, salicylic acid, phydroxybenzoic acid and cyclohexanol.The copolymerization reactions of 2-(N-phthalimido) ethylmethacrylate (PEMA) with methylacrylate, ethylacrylate andbutylacrylate, styrene and vinylacetate, were carried out bysolution polymerization in dimethylformamide (DMF) at 600C inpresence of 1 mol % azobis-isobutyronitril (AIBN). Thecopolymer composition of each sample was calculated fromNitrogen analysis. The monomer reactivity ratios (r1 and r2) ofeach system were calculated according to Fineman-Ross andKelen-Tüdös methods as illustrated in the following Table:System Fineman-Ross method Kelen-Tüdös methodM1-M2 r1 r2 r1 r2PEMA-MA 1.53 0.103 1.49 0.0995PEMA -EA 3.18 0.826 3.41 0.826PEMA -BA 1.04 1.399 1.01 1.41PEMA -ST 0.93 1.624 0.83 1.6PEMA -VA 31.168 0.37 32.174 0.3908In all system studied no azeotropic copolymers appears.SUMMARYii iSome of the newly synthesized compounds were screened fortheir antimicrobial activity using the diffusion agar techniqueswere tested against bacterial species as well as against fungalspecies .these species are:1. Gram positive bacteria.Staphylococcus aureus.2. Gram negative bacteria.Escherichia coli3. Aspergillus flavus.4. Candida albicans.