

Faculty of Science

Department: Chemistry

Name: Ahmed Ahmed El Barbary

Title: Effect of polymethylmethacrylate-montmorillonite nanocomposite on the release of some biologically active 1,2,4-triazine derivatives

Authors: N.A.Salahuddin; A.A.El-Barbary & N.I.Abdo

Published In: Polymer Composites, (2009)

Impact Factor: 1.1

Abstract:

Methylmethacrylate chloromethylstyrene copolymer-montmorillonite (PMMA-MMT) intercalated nanocomposite was prepared by bulk copolymerization of methylmethacrylate (MMA) and chloromethylstyrene (2 wt%) followed by phosphonium salt formation. The intercalation of polymeric phosphonium salt into montmorillonite was achieved through an ion exchange process between sodium cations in MMT and phosphonium groups attached to the copolymer. Thermogravimetric analysis (TGA) showed improved thermal stability for the intercalated nanocomposite in comparison with the pure PMMA. Biologically active compounds including 4-amino-6-methyl-3-thioxo-3,4-dihydro-2H-(1,2,4)triazin-5-one(I), 4-amino-6-methyl-3,4-dihydro-2H-(1,2,4)triazin-3,5-dithione (II), 4-amino-6(methoxystyryl)-3-thioxo-3,4-dihydro-2H-(1,2,4)triazin-5-one (III) and 4-amino-6-styryl-3-thioxo-3,4-dihydro-2H-(1,2,4)triazin-5-one (IV) have been prepared and reacted with PMMA-MMT intercalates and ion exchanged with sodium montmorillonite (MMT) in the presence of HCl. Infrared spectra (IR) show bands characteristic to amide linkage between triazine derivatives and PMMA. These nanocomposites have been characterized by X-ray diffraction (XRD) and transmission electron microscope (TEM). The release of biologically active compounds intercalated layered silicates is controllable and these materials have a great potential as a delivery host in the pharmaceutical field. The effect of temperature and presence of saline solution on the release was studied.

Faculty of Science

Department: Chemistry

Name: A.A.El-Barbary

Title: The synthesis of some new quinawolone de'rivatives of potential biological activity

Authors: A.A.El-Barbary, A.Z.Abou El-Ezz & A.M.Shgaraf

Published In: Phosphorus sulfur and silicon and the related elements,181 (2006)

Impact Factor: 0.564

Abstract:

The refluxing of 3-amino-6,8-dibromo-2-thioxo-2,3-dihydro-1H-quinazolin-4-one (5) with ethyl chloroformate and/or ethyl chloroacetate afforded compounds 6 and 7. The reaction of 5 with ethyl bromobutyrate, chloroacetyl chloride, phenacyl chloride, and phenyl isocyanate yielded compounds 8,9,11 and 12. The coupling of 5 with (2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl) bromide (ABG) in DMF at r.t. gave 3-amino-3,6-dibromo-2-(2',3',4',6'-tetra-O-acetyl-β-D-glucopyranosyl) thioxo-2,3-dihydro-1H-quinazolin-4-one (14). The deblocking of 14 in sodium methoxide gave 5. 3-Amino-6,8-dibromo-2-methylthio-3H-quinazolin-4-one (16) was prepared by stirring 5 with methyl iodide in methanol. The treatment of 16 with hydrazine hydrate afforded 4. The condensation of 4 with aldehydes furnished 3,5-dibromo-2-arylamino benzoic acid hydrazide (18a-c). The refluxing of 18a with acetic anhydride gave 3-(benzylideneamino)-6,8-dibromo-2-methyl-3H-quinazolin-4-one (19). Hydrazones 20a-f were prepared by the condensation of 4 with pentoses and/or hexoses. The acetylation of (20a-f) with acetic anhydride gave the acetyl derivatives 21a-f.

Faculty of Science

Department: Chemistry

Name: A.A. El Barbary

Title: Studies on 2,4-dithioxo and 2-thioxoimidazolidene derivatives

Authors: A.A. El Barbary, A.Z. Abou El Ezz & A.M. Sharaf

Published In: Phosphorus, sulfur, and silicon, 182(7), (2007)

Impact Factor: 0.39

Abstract:

5,5-dimethylimidazolidine-2,4-dithione (1) undergoes a Mannich reaction to give 5,5-dimethyl-3-(4-morpholinomethyl)imidazolidine-2,4-dithione (2) which on treatment with (2,3,4,6-tetra-O-acetyl- α -D-glucopyranosyl) bromide (ABG) afforded 5,5-dimethyl-3-(4-morpholinomethyl)-2-(2',3',4',6'-tetra-O-acetyl- β -thioglucopyranosyl)-4-thiohydantoin (3). Oxidation of 3 with KMnO₄ furnished the corresponding sulfone 4. Deblocking of 3 with sodium ethoxide afforded 1. Reaction of 1 with ABG gave the N-glucoside 5. Deblocking of 5 afforded 5,5-dimethyl-3-N-(3,4,5-trihydroxy-1 β -hydroxy-methyltetrahydropyran-2-yl)imidazolidine-2,4-dithione (6). Oxidation of 5 yielded 5,5-dimethylimidazolidine-3-N-(2',3',4',6'-tetra-O-acetyl-B-D-glucopyranosyl)-2-oxo,4-thione (7). Reaction of 1 with phenacyl chloride afforded 8, which on thiation with P₄S₁₀ gave 9. 5-Benzylidene-2-thioxoimidazolidin-4-one (10) reacted with some halo compounds and afforded 11 and 12. Treatment of 10 with 2,4-dinitro-1-chlorobenzene afforded N,N-dimethyl-2,4-dinitrobenzamide (13) and 2-benzylidene-6-nitro-2H-benzo [2,1-b] thiazol-3-one (14). Refluxing 12 with semicarbazides gave 15 and 16. Boiling 12 with 4-aminoacetophenone furnished 18, which on treatment with hydrazine gave 5-benzylidene-2-(1-hydrazonoethyl) phenylimino]-4-one (19). Condensation of 18 with benzaldehyde yielded 5-benzylidene-2-[4-phenylacryloyl) phenylimino]-imidazolidin-4-one (20).

Key words:

Alkylation; glucoside, hydrazide, HIV. Microbial activity; imidazolidines; Mannich bases.