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A Facial Synthesis and Anticancer Activity of (Z)-2-((5-(4-nitrobenzylidene)-4-oxo-4,5-dihydrothiazol-2-yl)amino)-substituted Acid (Article)

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Abstract

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In order to explore the anticancer and antimicrobial activity associated with the thiazole framework, we synthesized the new series (Z)-2-((5-(4-nitrobenzylidene)-4-oxo-4,5-dihydrothiazol-2-yl)amino)-substituted acid derivatives 6a–l. All the synthesized compounds were evaluated for anticancer and antimicrobial activity in vitro. Among these, the compounds 6a, 6b, 6c, 6e, 6f, 6g, 6h, 6i, 6j, and 6k showed highest antibacterial and antifungal activity. The compound 6a exhibited significant antibacterial activity against *Bacillus subtilis*, whereas compound 6j displays significant antifungal activity against fungal strains, that is, *A. oryzae*. The in vitro anticancer studies revealed that 6e, 6g, 6h, 6k, and 6l are the most active compounds against MCF-7 and BT-474 human breast cancer cell lines, which can be regarded as the promising drug candidate for development of anticancer drugs. © 2017 Wiley Periodicals, Inc.

SciVal Topic Prominence

Topic: Thiazolidines | Evaluation Studies as Topic | thioglycolic acid

Prominence percentile: 93.261

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Indexed keywords

EMTREE drug terms:

2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino] 3 phenylpropanoic acid
 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]propanoic acid
 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]succinic acid
 3 (1h imidazol 4 yl) 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]propanoic acid
 3 (4 hydroxyphenyl) 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]propanoic acid
 3 hydroxy 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]butanoic acid
 3 hydroxy 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]propanoic acid
 3 mercapto 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]propanoic acid
 3 methyl 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]butanoic acid
 3 methyl 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]pentanoic acid
 4 (methylthio) 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]butanoic acid
 4 methyl 2 [[5 (4 nitrobenzylidene) 4 oxo 4,5 dihydrothiazol 2 yl]amino]pentanoic acid (ampicillin)
 antifungal agent (antineoplastic agent) (antiinfective agent) (ciprofloxacin) (doxorubicin)
 fluconazole (miconazole) (thiazole derivative) (unclassified drug)

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Chemicals and CAS Registry Numbers:

ampicillin, 69-52-3, 69-53-4, 7177-48-2, 74083-13-9, 94586-58-0; ciprofloxacin, 85721-33-1; doxorubicin, 23214-92-8, 25316-40-9; fluconazole, 86386-73-4; miconazole, 22832-87-7, 22916-47-8

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