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Volume 92, 6 March 2015, Pages 191-201

## Design, synthesis, QSAR analysis and anticancer activity of novel N-(2-(2-(2-oxoindolin-3-ylidene)hydrazinecarbonyl)phenyl)-benzamides and 3-(2-oxoindolin-3-ylideneamino)-2-substituted quinazolin-4(3H)-ones as CFM-1 analogs: Design, synthesis, QSAR analysis and anticancer activity (Article)

Alafeefy, A.M.<sup>a</sup>, Ashour, A.E.<sup>b</sup>, Prasad, O.<sup>c</sup>, Sinha, L.<sup>c</sup>, Pathak, S.<sup>c</sup>, Alasmari, F.A.<sup>d</sup>, Rishi, A.K.<sup>e,f,g</sup>, Abdel-Aziz, H.A.<sup>h,i</sup><sup>a</sup>Department of Pharmaceutical Chemistry, College of Pharmacy, Salman Bin Abdulaziz University, P.O. Box 173, Alkharj, 11942, Saudi Arabia<sup>b</sup>Department of Pharmacology and Toxicology, College of Pharmacy, King Saud University, P.O. Box 2457, 11451, Saudi Arabia<sup>c</sup>Department of Physics, University of Lucknow, Lucknow, 226007, India[View additional affiliations >](#)

### Abstract

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The reaction of N-(2-(hydrazinecarbonyl)aryl)benzamides 2a, b with indoline-2,3-diones 4ae in acidified ethanolic solution furnished the corresponding N-(2-(2-(2-oxoindolin-3-ylidene)hydrazinecarbonyl)phenyl)benzamides 5aj, respectively. Furthermore, 3-(2-oxoindolin-3-ylideneamino)-2-substituted quinazolin-4(3H)-ones 6aj were prepared by the reaction of 3-amino-2-arylquinazolin-4(3H)-one 3a, b with 4ae. Six derivatives of the twenty newly synthesized compounds showed remarkable antitumor activity against most of the tested cell lines, Daoy, UW228-2, Huh-7, Hela and MDA-MB231. Although these six compounds were more potent than the standard drug (CFM-1), indeed compounds 5b, 5d and 6b were the best candidates with IC<sub>50</sub> values in the range 1.866.87, 4.4210.89 and 1.468.60 1/4g/ml and percentage inhibition in the range 77.188.7, 59.4184.8 and 75.488.0%, respectively. QSAR analyses on the current series of derivatives also have been performed for all five cancer cell lines and thus 10 statistically significant models were developed and internally cross validated. © 2014 Elsevier Masson SAS.

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[3 \(5 methoxy 2 oxoindolin 3 ylideneamino\) 2 4 tolylquinazolin 4\(3h\)one](#)  
[3 \(5 methyl 2 oxoindolin 3 ylideneamino\) 2 \(thiophen 2 yl\)quinazolin 4\(3h\)one](#)  
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[3 \(5 nitro 2 oxoindolin 3 ylideneamino\) 2 4 tolylquinazolin 4\(3h\)one](#)  
[4 methyl n \(2 \(2 \(2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\)benzamide](#)  
[4 methyl n \(2 \(2 \(5 methyl 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\)benzamide](#)  
[4 methyl n \(2 \(2 \(5 nitro 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\)benzamide](#)  
[4 nitro n \(2 \(2 \(2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\)benzamide](#)  
[4 nitro n \(2 \(2 \(5 nitro 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\)benzamide](#)  
[antineoplastic agent](#) [benzamide derivative](#)  
[n \(2 \(2 \(5 chloro 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\) 4 methyl benzamide](#)  
[n \(2 \(2 \(5 chloro 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\) 4 nitrobenzamide](#)  
[n \(2 \(2 \(5 methoxy 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\) 4 methyl benzamide](#)  
[n \(2 \(2 \(5 methoxy 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\) 4 nitrobenzamide](#)  
[n \(2 \(2 \(5 methyl 2 oxoindolin 3 ylidene\)hydrazinecarbonyl\)phenyl\) 4 nitrobenzamide](#)  
[quinazoline derivative](#) [unclassified drug](#) [antineoplastic agent](#) [benzamide derivative](#)  
[benzodiazepine derivative](#) [CFM 1](#) [indole derivative](#)  
[N-\(2-\(2-\(2-oxoindolin-3-ylidene\)hydrazinecarbonyl\)phenyl\)-benzamide](#) [quinazolinone derivative](#)

## EMTREE medical terms:

[antineoplastic activity](#) [antiproliferative activity](#) [Article](#) [cancer cell line](#) [drug design](#)  
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## MeSH:

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triple negative breast cancers

Cheriyian, V.T. , Muthu, M. , Patel, K.  
(2016) *Oncotarget*

Identification and testing of novel CARP-1 functional mimetic compounds as inhibitors of non-small cell lung and triple negative breast cancers

Muthu, M. , Somagoni, J. , Cheriyian, V.T.  
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## Chemicals and CAS Registry Numbers:

Antineoplastic Agents; Benzamides; Benzodiazepinones; CFM 1; Indoles; N-(2-(2-(2-oxoindolin-3-ylidene)hydrazinecarbonyl)phenyl)-benzamide; Quinazolinones

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King Saud University		KSU
National Plan for Science, Technology and Innovation	10-MED1188-02	NPST

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