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Synthesis of methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino] alkanoates and methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonyl-amino)alkanamido] alkanoate

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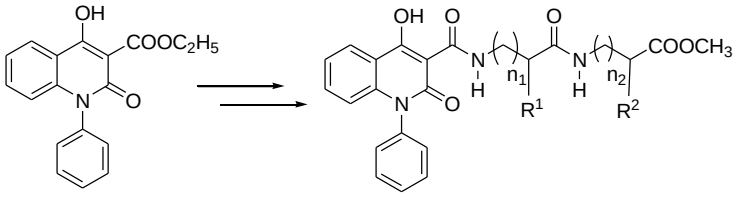
Abstract

A series of methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] alkanoates **7a-f** has been developed by the direct condensation of ethyl [4-hydroxy-2-oxo--1-phenyl-1,2-dihydro-3-quinoline] carboxylate **4** with amino acid ester hydrochloride in the presence of triethylamine. The quinoline amino acid esters **7a-f** were the key intermediate for the preparation of a series of methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)alkanamido] alkanoate **10-13**(**a-f**) *via* azide coupling method with amino acid ester.

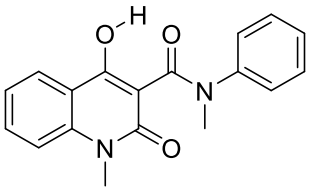


Keywords: Amino acid esters, DCC coupling method, azide coupling method, direct amino acid condensation, anisotropy, intramolecular hydrogen bond interactions, linomide

Introduction

Quinoline is a very important *N*-heteroaromatic compound known to possess a wide variety of pharmacological activities[1] such as. antimalarial,[2] antibacterial,[3,4] antitubuerculosis,[5] anticancer activity,[6,7] analgesic activity,[8] anti-inflammatory activity,[8] anti-rheumatic,[9] antitinephritic,[10] or in treating alzheimer's disease (AD).[11]

Linomide (roquinimex), immunomodulator drug showed a wide variety of effective applications in immunotherapy of tumors,[12,13] has a profound inhibitory influence in several experimental autoimmune diseases, including acute and chronic experimental allergic encephalomyelitis[14] and has a potential for the treatment of multiple sclerosis.[15]

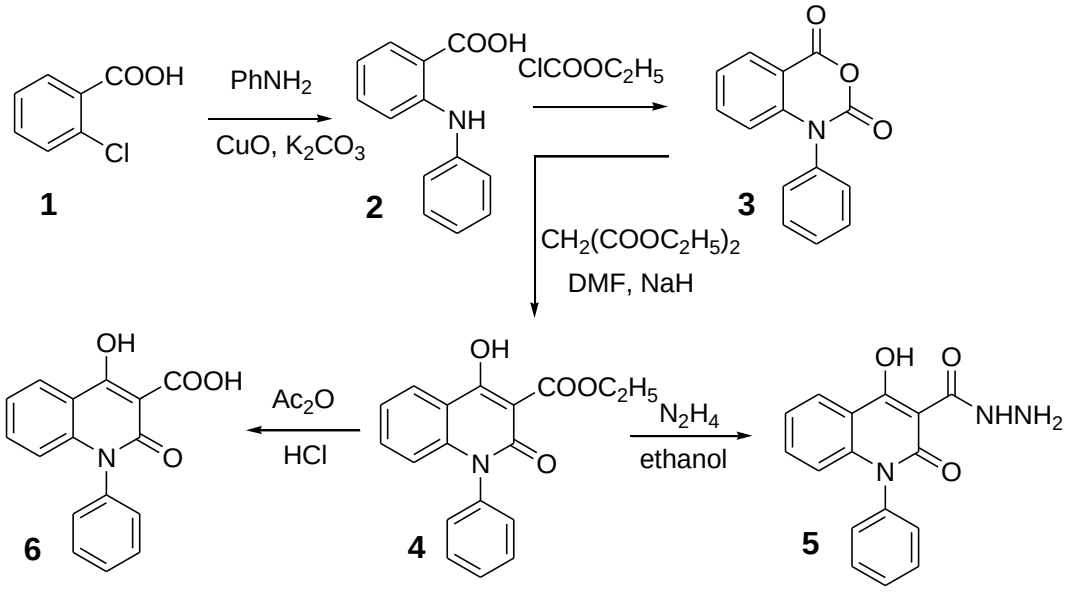


Roquinimex (Linomide)

Non-proteinogenic amino acids are major component in a number of drugs including *β*-lactam antibiotics[16] and glutamate antagonists.[17] The attachement of new heterocyclic compounds to amino acid esters and dipeptide might provide structures with interesting conformation, stability and biological activity.

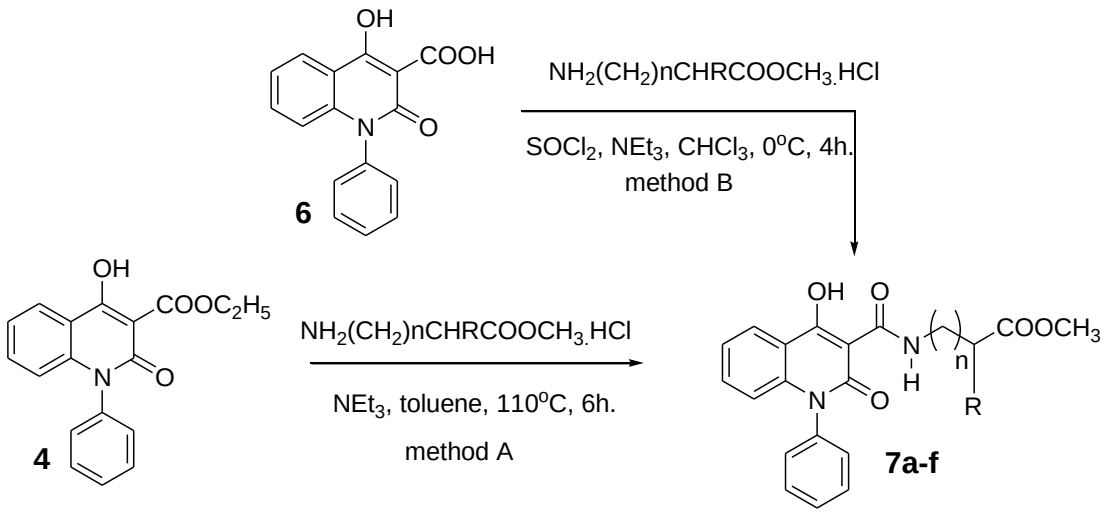
Results and Discussion

We now report the preparation of methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino] alkanoates and dipeptide ester derivatives. The ester **4** was prepared by a series of sequential reactions starting with Ulmann condensation of *o*-chlorobenzoic acid **1** with aniline in the presence of K_2CO_3 and CuO to give *N*-phenylsubstituted anthranilic acid **2**[18] that subsequently reacted with ethyl chloroformate in the presence of triethylamine to afford the *N*-phenyl substituted isatoic anhydride **3**. Isatoic anhydride **3** was condensed with diethyl malonate in the presence of NaH in DMF to afford ethyl [4-hydroxy-2-oxo-1-phenyl-1,2-dihydro-3-quinoline] carboxylate **4** in 74% yield.[19] Hydrazinolyis of the ester **4** was achieved by refluxing **4** in the presence of hydrazine hydrate in ethanol for 4 h. and gave the hydrazide **5**. The hydrolysis of this ester **4** to give the carboxylic acid derivative **6** was only possible by acid hydrolysis using HCl and acetic anhydride at 60 ^{o}C for 6h.[20] to give the pure carboxylic acid **6** in good yield. (normal saponification in basic medium and acidic medium gave mixture of products), Scheme 1.



Scheme 1

Coupling amino acid residue to quinoline ring system to afford the target compounds methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] alkanoate **7a-f** could be achieved from compounds **5** and **6** *via* Azide and DCC coupling methods, respectively. Unfortunately, these coupling methods gave negative results propably due to hydrogen bond interaction between the C=O and OH located at position 4. The only positive result was achieved by coupling the carboxylic acid derivative **6** with amino acid ester hydrochloride in $CHCl_3$ and in the presence thionyl chloride and triethylamine at 0 ^oC for 4h.[20] The desired product **7a-f** was obtained after column separation in poor yield (6-18% yield) we also noticed that the starting acid was not completely consumed (TLC monitored), Scheme 2. We tried to improve the yield of this reaction but more problems started to appear when we extended the time of the reaction or when we raised the temperature. Our efforts for the preparation of **7a-f** in high yields was successful using the direct reaction of amino acid esters with the ester **4**. Thus, condensation of ethyl [4-hydroxy-2-oxo-1-phenyl-1,2-dihydro-3-quinoline] carboxylate **4** with amino acid ester hydrochloride in the presence of triethylamine in toluene under reflux condition for 6 h. gave the amino acid deivatives **7a-f** in high yield (65-93%), Scheme 2.



7	n	R	7	n	R
a	0	H	**d**	1	H
b	0	CH_3	**e**	0	Ph
c	0	$CH_2CH(CH_3)_2$	**f**	0	$(CH_2)_2COOCH_3$

Scheme 2

The structure assignment of amino acid derivatives **7a-f** is based on ^{1}H and ^{13}C NMR spectroscopy as well as physicochemical analysis, Figure 1. Thus, the ^{1}H NMR spectrum of **7a** exhibits two interesting singlet signals at δ 16.67 and 10.55 ppm corresponding to OH and NH groups, respectively. These rather down fielded shifts are due to intramolecular hydrogen bond interaction of the type O-H…O=C and N-H…O=C, respectively. The ^{1}H NMR spectrum of **7a** exhibits an interesting doublet signal at δ 8.26 ppm due to anisotropic shielding of the neighboring carbonyl on an aromatic proton. All three chemical shifts mentioned earlier are common for all amino acid derivatives **7a-f** which confirms the fixed planar structure. The ^{1}H NMR spectrum also shows signals at δ 4.20, 3.78 ppm typically associated with the $NHC\underline{H}_2$ and OCH_3 groups of the glycine residue. The ^{13}C NMR spectrum of **7a** reveals quaternary carbon signals at δ 172.6, 171.4 and 169.4 ppm assigned to C=O ester, C-OH and C=O amide respectively. The ^{13}C NMR spectrum of **7a** also reveals signals at δ 52.4 and 40.9 ppm associated with OCH_3 and $NHCH_2$, respectively, figure 1.

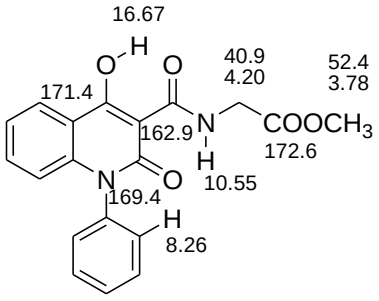
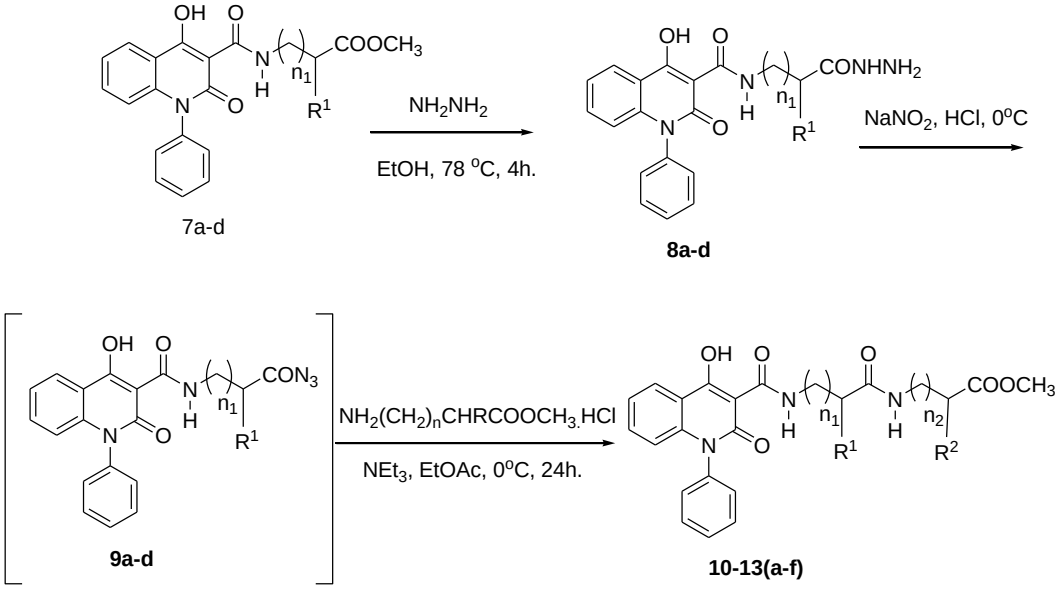


Figure 1. Selected ^{1}H and ^{13}C NMR spectral data of methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] acetate **7a**.

Our next target was structure modification of quinoline ring system by attachement of a series dipeptides to give a series of methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino) alkanamido] alkanoate **10-13**(**a-f**). The synthesis of the target dipeptide derivatives **10-13**(**a-f**) were efficiently formed from the key amino acid ester derivatives **7a-f** *via* azide coupling method. Thus, amino acid derivatives **7a-d** were boiled with hydrazine hydrate in ethyl alcohol to afford the hydrazides **8a-d**, which were subsequently converted into azides **9a-d** b**y** treatment with $NaNO_2$ and HCl mixture. The *insitu* generated azide derivative **9a-d** in ethyl acetate was used in a *one-pot* strategy without purification nor isolation**.** The azide **9a-d** solution in ethyl acetate was reacted with amino acid methyl ester hydrochloride in the presence of triethylamine to afford methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino) alkanamido] alkanoate **10-13**(**a-f**) in good yield, scheme 3. The presence of amino acid spacer prevented the intramolecular hydrogen bond interaction from interfering the coupling reaction as in case of direct coupling of the hydrazide **5**.



7a-d **8a-d** **9a-d** **10-13(a-f)**

10-13	n_1	R^1	n_2	R^2	abb.	10-13	n_1	R^1	n_2	R^2	abb.
10a	0	H	0	H	Gly-Gly	**10d**	0	H	1	H	Gly-β-Ala
10b	0	H	0	CH_3	Gly-Ala	**10e**	0	H	0	Ph	Gly-Phg
10c	0	H	0	$CH_2CH(CH_3)_2$	Gly-Leu	**10f**	0	H	0	$(CH_2)_2COOCH_3$	Gly-Glu
11a	0	CH_3	0	H	Ala-Gly	**11d**	0	CH_3	1	H	Ala-β-Ala
11b	0	CH_3	0	CH_3	Ala-Ala	**11e**	0	CH_3	0	Ph	Ala-Phg
11c	0	CH_3	0	$CH_2CH(CH_3)_2$	Ala-Leu	**11f**	0	CH_3	0	$(CH_2)_2COOCH_3$	Ala-Glu
12a	0	$CH_2CH(CH_3)_2$	0	H	Leu-Gly	**12d**	0	$CH_2CH(CH_3)_2$	1	H	Leu-β-Ala
12b	0	$CH_2CH(CH_3)_2$	0	CH_3	Leu-Ala	**12e**	0	$CH_2CH(CH_3)_2$	0	Ph	Leu-Phg
13a	1	H	0	H	β-Ala-Gly	**13d**	1	H	1	H	β-Ala-β-Ala
13b	1	H	0	CH_3	β-Ala-Ala	**13e**	1	H	0	Ph	β-Ala-Phg
13c	1	H	0	$CH_2CH(CH_3)_2$	β-Ala-Leu	**13f**	1	H	0	$(CH_2)_2COOCH_3$	β-Ala-Glu

Scheme 3

The structure assignment of dipeptide derivatives **10-13**(**a-f**) is based on ^1H and ^{13}C NMR spectroscopy as well as physicochemical analysis, Figure 2. Thus the ^1H NMR spectrum of **10a** exhibits two interesting singlet

signals at δ 16.54 and 10.55 ppm corresponding to OH and NH groups, respectively. The ^{1}H NMR spectrum of **10a** exhibits an interesting doublet signal at δ 8.25 ppm due an aromatic proton. All three chemical shifts mentioned gave similar results with the amino acid derivative **7a-f** and are common for all dipeptide derivatives **10-13**(**a-f**), which confirms the fixed planar structure. The ^{1}H NMR spectrum also shows signals at δ 4.17, 3.75 ppm typically associated with 2NHC<u>H</u>$_2$ and OCH_3 groups of both glycine residues. The ^{13}C NMR spectrum of **10a** reveals quaternary carbon signals at δ 172.7, 171.8, 170.0, 168.6 and 162.9 ppm assigned to C=O ester, C-OH and 3C=O amide respectively. The ^{13}C NMR spectrum of **10a** also reveals signals at δ 52.3, 45.0 and 41.3 ppm associated with OCH_3 and $2NHCH_2$, respectively, figure 2.

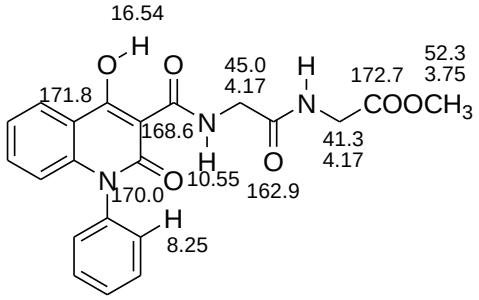


Figure 2. Selected ^{1}H and ^{13}C NMR spectral data of methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)acetamido] acetate **10a.**

Conclusions

A direct condensation of amino acid esters with ethyl [4-hydroxy-2-oxo--1-phenyl-1,2-dihydro-3-quinoline] carboxylate **4** in the presence of triethylamine gave a series of quinoline amino acid derivatives **7a-f**. The quinoline amino acid esters **7a-f** were the key intermediate for the preparation of a series of methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino)alkanamido] alkanoate **10-13**(**a-f**) *via* azide coupling method with amino acid ester.

Acknowledgements

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Experimental Section

General. Solvent were purified and dried by standard procedures. The boiling range of the petroleum ether used was 40-60 ^{o}C. Thin layer chromatography (TLC): silica gel 60 F_{254} plastic plates (E. Merck, layer thickness 0.2 mm) detected by UV absorption. Elemental analyses were performed on a *Flash EA-1112* instrument at the Microanalytical laboratory, Faculty of Science, Suez Canal University, Ismailia, Egypt. Melting points were determined on a Buchi 510 melting-point apparatus and the values are uncorrected. ^{1}H and ^{13}C NMR spectra

were recorded at 300 MHz and 75.5 MHz, respectively (Bruker AC 300) in $CDCl_3$ and DMSO solution with tetramethylsilane as an internal standard. The NMR analysis were performed at Organic Chemistry Department Masaryk University, Brno, Czech Republic. The starting compounds **2-4**, **6** were obtained as described in literature.[18-20]

Ethyl [4-hydroxy-2-oxo--1-phenyl-1,2-dihydroquinolin-3-yl] carboxylate (**4**). Condensation of diethyl malonate and isatoic anhydride derivative in the presence of sodium hydride in dry dimethylformamide led to compound **4**.[19] Yield 74% white crystals, mp 188-189 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 14.45 (1H, s, OH); 8.21 (1H, d, *J* 8.0, ArH); 7.58–7.22 (7H, m, ArH); 6.61 (1H, d, *J* 8.0, ArH); 4.28 (2H, q, *J* 6.0, OCH_2); 1.45 (3H, t, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 172.5 (C-OH); 159.7 (C=O amide); 142.3 (C Ar); 137.6 (C Ar); 133.9 (CHAr); 130.1 (CHAr); 129.3 (CHAr); 128.8 (CHAr); 125.3 (CHAr); 122.1 (CHAr); 115.9 (CHAr); 114.7 (C Ar); 98.1 (C Ar); 62.3 (OCH_2); 14.3 (CH_3). Found, %: C, 69.65; H, 4.81; N, 4.49. For $C_{18}H_{15}NO_4$ (309.1). Calculated, %: C, 69.89; H, 4.89; N, 4.53.

[4-Hydroxy-2-oxo--1-phenyl-1,2-dihydroquinolin-3yl] carbohydrazide (5). To a solution of ster derivative **4** (0.31 g, 1.0 mmol) in ethyl alcohol (15 mL), hydrazine hydrate (0.4 mL, 1.0 mmol) was added. The reaction mixture was refluxed for 4 hours, cooled and the resultant precipitate was filtered off, washed with ethanol and ether then crystallized from aqueous ethanol to yield the hydrazide **5**. 0.18 g, Yield 62% white crystals, mp 209-210 °C. ^{1}H NMR spectrum, (300 MHz, DMSO-d_6), δ, ppm (*J*, Hz): 10.78 (1H, s, NH); 8.15 (1H, d, *J* 8.0, ArH); 7.70–7.52 (5H, m, ArH); 7.38–7.18 (5H, m, ArH); 6.53 (1H, d, *J* 8.0, ArH); 4.86 (2H, bs, NH_2). ^{13}C NMR spectrum, (75.0 MHz, DMSO-d_6), δ, ppm: 171.7 (C=O ester); 168.4 (C-OH); 161.2 (C=O amide); 141.0 (C Ar); 137.4 (C Ar); 134.2 (CHAr); 130.5 (CHAr); 129.6 (CHAr); 129.4 (CHAr); 124.8 (CHAr); 123.2 (CHAr); 116.3 (CHAr); 115.2 (C Ar). Found, %: C, 64.96; H, 4.38; N, 14.12. For $C_{16}H_{13}N_3O_3$ (295.1). Calculated, %: C, 65.08; H, 4.44; N, 14.23.

4-Hydroxy-1-phenyl-2-oxo-1,2-dihydro-3-quinoline carboxylic acid (6). To a solution of acetic anhydride (450 mL) at 0 °C was slowly added (very exothermic) concentrated HCl (138 mL, 37%). This yields an approximately 2.8 M solution of HCl in acetic acid with a low water content, and the solution can be kept in a refrigerator for several years. To ethyl 4-hydroxy-1-phenyl-2-oxo-1,2-dihydro-3-quinolinecarboxylate **4** (0.31 g, 1.0 mmol) was added 10 mL of the above solution of 2.8 M HCl in acetic acid, and the mixture was heated for 6 h at 60 °C using a reflux condenser. The reaction mixture was cooled and resultant crystals were filtered off, washed with 2-propanol, and dried in a vacuum to furnish the product 4-hydroxy-1-phenyl-2-oxo-1,2-dihydro-3-quinoline carboxylic acid. White crystals, 0.24g, Yield 87% white crystals, mp 195-196 °C.^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 15.16 (1H, s, OH); 14.75 (1H, s, OH); 8.31 (1H, d, *J* 8.0, ArH); 7.68–7.58 (4H, m, ArH); 7.44–7.34 (3H, m, ArH); 6.81 (1H, d, *J* 8.0, ArH). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.3 (C=O ester); 172.2 (C-OH); 165.0 (C=O amide); 140.8 (C Ar); 135.7 (C Ar); 134.7 (CHAr); 130.5 (CHAr); 129.8 (CHAr); 128.7 (CHAr); 125.6 (CHAr); 123.9 (CHAr); 116.8 (CHAr); 115.6 (C Ar); 95.2 (C Ar). Found, %: C, 68.17; H, 3.75; N, 4.87. For $C_{16}H_{11}NO_4$ (281.1). Calculated, %: C, 68.32; H, 3.94; N, 4.98.

Methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] alkanoates (7a-f). Method A. Amino acid ester hydrochloride (1.2 mmol) and ethyl 1,2-dihydro-4-hydroxy-1-phenyl-2-oxo-3-quinolinecarboxylate **4** (3.7 g, 1.0 mmol) and triethylamine (0.12 mL, 1.2 mmol) were dissolved in 100 mL of dry toluene. The reaction mixture was refluxed and an amount of approximately 60 mL of the volatiles was distilled off at atmospheric pressure for 6 h. using a Dean stark system. After cooling, the reaction mixture was evaporated under reduced pressure and the resultant solid was crystalized from ethanol.

Method B. To a solution of 4-hydroxy-1-phenyl-2-oxo-1,2-dihydro-3-quinoline carboxylic acid **6** (0.28 g, 1.0 mmol) was added CH_2Cl_2 (38 mL), triethylamine (0.20 mL, 2.0 mmol), and *N*-ethylaniline (0.2 mL, 1.2 mmol).

The mixture was stirred under nitrogen and cooled to 0 °C, and a solution of thionyl chloride (0.2 mL, 1.5 mmol) in CH_2Cl_2 (10 mL) was added during 30 min. The stirring was continued at 0 °C for 4 h and then at room temperature for 30 min. The reaction mixture was diluted with $CHCl_3$ and quickly washed with cold 1 M H_2SO_4. The organic phase was dried over sodium sulfate and then evapourated. The oily residue was then purified using flash column chromatography using pet. ether : ethyl acetate 3:1 eluent to give the amino acid ester derivatives **7a-f**:

Methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] acetate (7a). Method A: 0.31 g, Yield 88%, Method B: 0.042 g, Yield 12%. white crystals, mp 194-195 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.67 (1H, s, OH); 10.55 (1H, bs, NH); 8.26 (1H, d, *J* 9.0, ArH); 7.64–7.29 (7H, m, ArH); 6.69 (1H, d, *J* 8.0, ArH); 4.20 (2H, d, *J* 6.0, CH_2); 3.78 (3H, s, OCH_3). ^{13}C NMR spectrum, δ, ppm: 172.6 (C=O ester); 171.4 (C-OH); 169.4 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.1 (C Ar); 133.5 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.7 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.9 (C Ar); 52.4 (OCH_3); 40.9 (CH_2). Found, %: C, 64.57; H, 4.42; N, 7.81. For $C_{19}H_{16}N_2O_5$ (352.1). Calculated, %: C, 64.77; H, 4.58; N, 7.95.

Methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino]propanoate (7b). Method A: 0.24 g, Yield 65%, Method B. 0.033 g, Yield 8%. white crystals, mp 150-151 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.81 (1H, s, OH); 10.48 (1H, d, *J* 6.0, NH); 8.24 (1H, d, *J* 8.0, ArH); 7.62–7.28 (7H, m, ArH); 6.65 (1H, d, *J* 8.0, ArH); 4.74–4.67 (1H, m, CH); 3.76 (3H, s, OCH_3); 1.51 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.8 (C=O ester); 172.6 (C-OH); 171.8 (C=O amide); 170.7 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.1 (C Ar); 133.4 (CHAr); 130.3 (CHAr); 129.2 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.7 (CHAr); 116.1 (CHAr); 115.9 (C Ar); 96.8 (C Ar); 52.4 (OCH_3); 48.0 (CH); 18.3 (CH_3). Found, %: C, 65.54; H, 4.84; N, 7.48. For $C_{20}H_{18}N_2O_5$ (366.1). Calculated, %: C, 65.57; H, 4.95; N, 7.65.

Methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino] 4-methyl-pentanoate (7c). Method A: 0.31 g, Yield 75%, Method B, 0.037 g, Yield 9%. white crystals, mp 120-121 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.48 (1H, s, OH); 10.14 (1H, bs, NH); 8.25 (1H, d, *J* 8.0, ArH); 7.63–7.28 (7H, m, ArH); 6.65 (1H, d, *J* 8.0, ArH); 3.66 (3H, s, OCH_3); 3.42 (2H, q, *J* 6.0, CH_2); 2.32 (2H, t, *J* 6.0, CH_2); 1.69-1.41 (6H, m, $2CH_3$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.9 (C=O ester); 173.0 (C-OH); 172.9 (C=O amide); 171.0 (C=O amide); 163.1 (C=O amide); 140.8 (C Ar); 137.2 (C Ar); 133.2 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 116.0 (C Ar); 96.7 (C Ar); 51.4 (OCH_3); 38.9 (C-Leu); 33.9 (CH_2-Leu); 29.0 (CH_2-Leu); 26.5 (CH_3); 24.6 (CH_3). Found, %: C, 67.59; H, 5.84; N, 6.77. For $C_{23}H_{24}N_2O_5$ (408.2). Calculated, %: C, 67.63; H, 5.92; N, 6.86.

Methyl 3-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino]propanoate (7d). Method A: 0.33 g, Yield 89%, Method B: 0.066 g, Yield 18%. white crystals, mp 190-191°C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.20 (1H, s, OH); 10.31 (1H, bs, NH); 8.26 (1H, d, *J* 8.0, ArH); 7.64–7.28 (7H, m, ArH); 6.66 (1H, d, *J* 8.0, ArH); 3.77–3.69 (3H, m, CH_2, OCH_3); 2.67 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.9 (C=O ester); 171.8 (C-OH); 171.3 (C=O amide); 163.0 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 133.3 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.0 (CHAr); 96.8 (C Ar); 51.8 (OCH_3); 34.9 (CH_2); 33.9 (CH_2). Found, %: C, 65.40; H, 4.86; N, 7.59. For $C_{20}H_{18}N_2O_5$ (366.1). Calculated, %: C, 65.57; H, 4.95; N, 7.65.

Methyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] 2-phenyl acetate (7e). Method A: 0.40 g, Yield 93%. Method B: 0.03 g, Yield 7%. white crystals, mp 190-191 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.64 (1H, s, OH); 10.95 (1H, d, *J* 6.0, NH); 8.25 (1H, d, *J* 8.0, ArH); 7.63–7.28 (13H, m, ArH, NH); 6.64 (1H, d, *J* 8.0, ArH); 5.74 (1H, d, *J* 6.0, CH); 3.77 (3H, s, OCH_3). ^{13}C NMR spectrum, (75.0

MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 170.6 (C-OH); 170.5 (C=O amide); 162.8 (C=O amide); 141.0 (C Ar); 135.7 (C Ar); 133.5 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.2 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 128.7 (CHAr); 127.6 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 97.0 (C Ar); 56.9 (CH); 52.8 (OCH_3). Found, %: C, 69.97; H, 4.66; N, 6.37. for $C_{25}H_{20}N_2O_5$ (428.1). Calculated, %: C, 70.08; H, 4.71; N, 6.54.

Dimethyl 2-[(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl) carbonylamino] 1,5-pentandioate (7f). Method A: 0.32g, Yield 74%, Method B: 0.026g, Yield 6%, Method B. white crystals, mp 150-151 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.65 (1H, s, OH); 10.54 (1H, d, *J* 6.0, NH); 8.18 (1H, d, *J* 8.0, ArH); 7.60–7.26 (7H, m, ArH); 6.61 (1H, d, d, *J* 8.0, ArH); 4.78–4.76 (1H, m, CH); 3.80–3.56 (8H, m, CH_2, $2OCH_3$); 2.43 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, δ, ppm: 172.7 (C=O ester); 172.6 (C=O ester); 171.3 (C-OH); 171.0 (C=O amide); 162.8 (C=O amide); 141.0 (C Ar); 137.1 (C Ar); 133.5 (CHAr); 130.3 (CHAr); 129.2 (CHAr); 129.0 (CHAr); 125.1 (CHAr); 122.7 (CHAr); 116.1 (CHAr); 115.7 (C Ar); 96.7 (C Ar); 52.5 (OCH_3); 51.7 (OCH_3); 51.4 (CH); 30.1 (CH_2); 27.2 (CH_2). Found, %: C, 62.84; H, 4.87; N, 6.28. For $C_{23}H_{22}N_2O_7$ (438.1). Calculated, %: C, 63.01; H, 5.06; N, 6.39.

2-[2-(1,2-Dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] alkanehydrazides 8a-d. General method. To a solution of methyl-2-[2-(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carboxamido] alkanoate **7a-d** (1.0 mmol) in absolute ethyl alcohol (30 mL), hydrazine hydrate (0.24 mL, 5 mmol) was added. The reaction mixture was refluxed for 4 hours, afterwards it was left overnight at room temperature. The formed precipitate was filtered off, washed with aqueous ethanol and ether then crystallized from ethanol to yield the hydrazide.

2-[(1,2-Dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] ethanhydrazide (8a). 0.27 g, Yield 78% white crystals, mp 270-271 °C. ^{1}H NMR spectrum, (300 MHz, DMSO-d_6), δ, ppm (*J*, Hz): 10.38 (1H, bs, NH); 9.38 (1H, bs, NH); 8.13 (1H, d, *J* 8.0, ArH); 7.65–7.60 (4H, m, ArH); 7.38–7.36 (3H, m, ArH); 6.57 (1H, d, *J* 8.0, ArH); 4.48 (3H, bs, NH_2); 4.15 (2H, d, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, DMSO-d_6), δ, ppm: 172.3 (C=O ester); 171.0 (C-OH); 167.5 (C=O amide); 162.1 (C=O amide); 141.2 (C Ar); 137.5 (C Ar); 134.4 (CHAr); 130.5 (CHAr); 129.7 (CHAr); 129.4 (CHAr); 125.0 (CHAr); 123.1 (CHAr); 116.4 (CHAr); 115.4 (C Ar); 96.8 (C Ar); 41.2 (CH_2). Found, %: C, 61.24; H, 4.48; N, 15.73. for $C_{18}H_{16}N_4O_4$ (352.1). Calculated, %: C, 61.36; H, 4.58; N, 15.90.

2-[(1,2-Dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] propan-hydrazide (8b). 0.24 g, Yield 65% white crystals, mp 230-231 °C. ^{1}H NMR spectrum, (300 MHz, DMSO-d_6), δ, ppm (*J*, Hz): 10.44 (1H, bs, NH); 9.41 (1H, bs, NH); 8.12 (1H, d, *J* 8.0, ArH); 7.63–7.55 (4H, m, ArH); 7.35–7.28 (3H, m, ArH); 6.51 (1H, d, *J* 8.0, ArH); 5.25 (3H, bs, NH_2); 4.53–4.46 (1H, m, CH); 1.31 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, DMSO-d_6), δ, ppm: 173.0 (C=O ester); 171.2 (C-OH); 169.9 (C=O amide); 162.9 (C=O amide); 141.2 (C Ar); 138.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.9 (CHAr); 129.1 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.0 (CHAr); 115.6 (C Ar); 97.3 (C Ar); 47.3 (CH); 19.4 (CH_3). Found, %: C, 62.12; H, 4.87; N, 15.17. For $C_{19}H_{18}N_4O_4$ (366.1). Calculated, %: C, 62.29; H, 4.95; N, 15.29.

2-[(1,2-Dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] 4-methyl pentanhydrazide (8c). 0.31g, Yield 76% white crystals, mp 170-171 °C. ^{1}H NMR spectrum, (300 MHz, DMSO-d_6), δ, ppm (*J*, Hz): 10.15 (1H, bs, NH); 8.84 (1H, bs, NH); 8.14 (1H, d, *J* 8.0, ArH); 7.64–7.57 (4H, m, ArH); 7.39–7.36 (3H, m, ArH); 6.57 (1H, d, *J* 8.0, ArH); 3.54 (2H, q, *J* 6.0, CH_2); 2.01 (2H, t, *J* 6.0, CH_2); 1.54-1.25 (6H, m, $2CH_3$). ^{13}C NMR spectrum, (75.0 MHz, DMSO-d_6), δ, ppm: 172.6 (C=O ester); 171.9 (C-OH); 170.9 (C=O amide); 163.1 (C=O amide); 141.1 (C Ar); 137.5 (C Ar); 134.4 (CHAr); 130.5 (CHAr); 129.7 (CHAr); 125.0 (CHAr); 123.1 (CHAr); 116.4 (CHAr); 96.8 (C Ar); 38.9 (C-Leu); 33.7 (CH_2-Leu); 28.9 (CH_2-Leu); 26.5 (CH_3); 25.3 (CH_3). Found, %: C, 64.57; H, 5.85; N, 13.61. For $C_{22}H_{24}N_4O_4$ (408.2). Calculated, %: C, 64.69; H, 5.92; N, 13.72.

3-[(1,2-Dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino] propanhydrazide (8d). 0.31g, Yield 84% white crystals, mp 245-246 °C. ^{1}H NMR spectrum, (300 MHz, DMSO-d_6), δ, ppm (*J*, Hz): 10.24 (1H, bs, NH); 9.04 (1H, bs, NH); 8.14 (1H, d, *J* 8.0, ArH); 7.66–7.57 (4H, m, ArH); 7.38–7.35 (3H, m, ArH); 6.56 (1H, d, *J* 8.0, ArH); 3.57 (2H, q, *J* 6.0, CH_2); 2.36 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, DMSO-d_6), δ, ppm: 172.6 (C=O ester); 171.0 (C-OH); 170.0 (C=O amide); 163.7 (C=O amide); 141.2 (C Ar); 137.5 (C Ar); 134.4 (CHAr); 130.5 (CHAr); 129.7 (CHAr); 129.4 (CHAr); 125.0 (CHAr); 123.0 (CHAr); 116.2 (CHAr); 115.6 (CHAr); 96.5 (C Ar); 35.5 (CH_2); 33.1 (CH_2). Found, %: C, C, 62.11; H, 4.73; N, 15.06. For $C_{19}H_{18}N_4O_4$ (366.1). Calculated, %: C, 62.29; H, 4.95; N, 15.29.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)alkan-amido] alkanoate 10-13 (a-f). General method. To a cold solution (-5 °C) of quinoline hydrazide **8a-d** (1.0 mmol) in AcOH (6 mL), 1 N HCl (3 mL), and water (25 mL) was added a solution of $NaNO_2$ (0.87 g, 1.0 mmol) in cold water (3 mL). After stirring at -5 °C for 15 min to afford a yellowish syrup. The reaction mixture was extracted with cold ethyl acetate (30 mL), washed with cold 3% $NaHCO_3$, H_2O and finally dried (Na_2SO_4) to give the *insitu* generated ethyl acetate solution of azide **9a-d**. A prepared cold solution of amino acid methyl ester hydrochloride (1.0 mmol) in ethyl acetate (20 mL) and triethylamine (20 mL, 1.0 mmol) was added to the azide solution **9a-d**. The mixture was kept at -5 °C for 24 h, then at 25 °C for another 24 h, followed by washing with 3% solution of $NaHCO_3$ and dried (Na_2SO_4). The solution was evaporated to dryness, and the residue was recrystallized from petroleum ether/ ethyl acetate to give the desired 2-[2-(1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carboxy] dipeptide ester derivatives **10-13** (**a-f**).

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] acetate (10a). 0.29 g, Yield 72% white crystals, mp 205-206 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.54 (1H, s, OH); 10.55 (1H, bs, NH); 8.25 (1H, d, *J* 9.0, ArH); 7.63–7.28 (7H, m, ArH); 6.71–6.66 (2H, m, ArH, NH); 4.17 (4H, d, *J* 6.0, $2CH_2$); 3.75 (3H, s, OCH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 171.8 (C-OH); 170.0 (C=O amide); 168.6 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.7 (CHAr); 130.3 (CHAr); 129.2 (CHAr); 129.0 (CHAr); 128.7 (CHAr); 125.3 (CHAr); 122.8 (CHAr); 116.2 (CHAr); 115.7 (C Ar); 96.8 (C Ar); 52.3 (OCH_3); 45.0 (CH_2); 41.3 (CH_2). Found, %: C, 61.49; H, 4.47; N, 9.98. For $C_{21}H_{19}N_3O_6$ (409.1). Calculated, %: C, 61.61; H, 4.68; N, 10.26.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] propanoate (10b). 0.21 g, Yield 49% white crystals, mp 208-209 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.57 (1H, s, OH); 10.62 (1H, t, *J* 6.0, NH); 8.26 (1H, d, *J* 9.0, ArH); 7.64–7.28 (7H, m, ArH); 6.69 (2H, d, *J* 9.0, ArH, NH); 4.67–4.58 (1H, m, CH); 4.21–4.01 (2H, m, CH_2); 3.75 (3H, s, OCH_3); 1.42 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.2 (C=O ester); 172.7 (C-OH); 171.8 (C=O amide); 167.9 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 125.3 (CHAr); 122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.8 (C Ar); 52.5 (OCH_3); 48.1 (CH); 43.1 (CH_2); 18.3 (CH_3). Found, %: C, 62.14; H, 4.74; N, 9.69. For $C_{22}H_{21}N_3O_6$ (423.1). Calculated, %: C, 62.41; H, 5.00; N, 9.92.

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] 4-methylpentanoate (10c). 0.34 g, Yield 73% white crystals, mp 140-141°C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.53 (1H, s, OH); 10.59 (1H, t, *J* 6.0, NH); 8.28 (1H, d, *J* 9.0, ArH); 7.64–7.28 (13H, m, ArH, NH); 6.70 (1H, d, *J* 9.0, ArH); 6.19 (1H, bs, NH); 4.70 (2H, d, *J* 6.0, ArH); 3.66 (3H, s, OCH_3); 3.31–3.24 (2H, m, CH_2); 2.33–2.28 (2H, m, CH_2); 1.68–1.34 (6H, m, $2CH_3$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 174.0 (C=O ester); 172.7 (C-OH); 171.8 (C=O amide); 168.3 (C=O amide); 163.0 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.7 (CHAr); 129.3 (CHAr); 128.9 (CHAr); 125.5 (CHAr); 122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.8 (C Ar);

51.4 (OCH_3); 43.3 (CH_2); 39.3 (CH_2); 33.8 (CH_2); 29.2 (CH_2); 26.3 (CH_3); 24.5 (CH_3). Found, %: C, 64.28; H, 5.74; N, 8.83. For $C_{25}H_{27}N_3O_6$ (465.2). Calculated, %: C, 64.50; H, 5.85; N, 9.03.

Methyl 3-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] propanoate (10d). 0.26 g, Yield 62% white crystals, mp 170-171 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.56 (1H, s, OH); 10.51 (1H, t, *J* 6.0, NH); 8.28 (1H, d, *J* 9.0, ArH); 7.66–7.28 (7H, m, ArH); 6.71–6.67 (2H, m, ArH, NH); 4.11 (2H, d, *J* 6.0, CH_2), 3.75 (3H, s, OCH_3); 3.55 (2H, q, *J* 6.0, CH_2); 2.55 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.7 (C=O ester); 172.7 (C-OH); 171.8 (C=O amide); 168.4 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.7 (CHAr); 130.3 (CHAr); 130.2 (CHAr); 129.2 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 122.8 (CHAr); 116.2 (CHAr); 115.8 (C Ar); 96.8 (C Ar); 51.7 (OCH_3); 43.2 (CH_2); 34.9 (CH_2); 33.7 (CH_2). Found, %: C, 62.28; H, 4.75; N, 9.75. For $C_{22}H_{21}N_3O_6$ (423.1). Calculated, %: C, 62.41; H, 5.00; N, 9.92.

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] 2-phenyl acetate (10e). 0.40 g, Yield 83% white crystals, mp 185-186 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.56 (1H, s, OH); 10.63 (1H, d, *J* 9.0, NH); 8.27 (1H, d, *J* 9.0, ArH); 7.37–7.28 (13H, m, ArH, NH); 6.69 (1H, d, *J* 9.0, ArH); 5.61 (1H, d, *J* 6.0, CH); 4.14 (2H, d, *J* 6.0, CH_2); 3.74 (3H, s, OCH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 171.9 (C-OH); 171.0 (C=O amide); 167.7 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 136.2 (C Ar); 133.6 (CHAr); 130.3 (CHAr); 129.2 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 128.5 (CHAr); 127.3 (CHAr); 125.3 (CHAr); 122.8 (CHAr); 116.2 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 56.5 (CH); 52.8 (OCH_3); 43.2 (CH). Found, %: C, 66.68; H, 4.64; N, 8.38. for $C_{27}H_{23}N_3O_6$ (485.2). Calculated, %: C, 66.80; H, 4.78; N, 8.66.

Dimethyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-acetamido] 1,5-pentandioate (10f). 0.33 g, Yield 66% white crystals, mp 140-141 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.58 (1H, s, OH); 10.53 (1H, t, *J* 6.0, NH); 8.28 (1H, d, *J* 9.0, ArH); 7.68–7.28 (7H, m, ArH); 7.01 (1H, d, *J* 6.0, NH); 6.63 (1H, d, d, *J* 9.0, ArH); 4.11 (2H, d, *J* 6.0, CH_2), 3.76 (3H, s, OCH_3); 3.67 (3H, s, OCH_3); 2.44–2.01 (4H, m, $2CH_2$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.2 (C=O ester); 172.6 (C=O ester); 172.1 (C-OH); 171.7 (C=O amide); 168.5 (C=O amide); 162.8 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.2 (CHAr); 130.2 (CHAr); 129.2 (CHAr); 129.1 (CHAr); 125.1 (CHAr); 122.7 (CHAr); 116.1 (CHAr); 115.7 (C Ar); 96.8 (C Ar); 52.5 (OCH_3); 51.8 (OCH_3); 51.7 (CH); 43.0 (CH_2); 30.0 (CH_2); 27.1 (CH_2). Found, %: C, 60.49; H, 4.83; N, 8.23. For $C_{25}H_{25}N_3O_8$ (495.2). Calculated, %: C, 60.60; H, 5.09; N, 8.48.

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] acetate (11a). 0.31 g, Yield 73% white crystals, mp 194-195 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.59 (1H, s, OH); 10.48 (1H, d, *J* 9.0, NH); 8.25 (1H, d, *J* 9.0, ArH); 7.64–7.28 (7H, m, ArH); 6.81 (1H, bs, NH); 6.66 (1H, d, *J* 9.0, ArH); 4.72–4.61 (1H, m, CH); 4.07 (2H, s, CH_2); 3.75 (3H, s, OCH_3); 1.50 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 171.8 (C-OH); 171.2 (C=O amide); 170.1 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.9 (C Ar); 52.3 (OCH_3); 49.0 (CH); 41.3 (CH_2); 13.3 (CH_3). Found, %: C, 62.23; H, 4.92; N, 9.67. For $C_{22}H_{21}N_3O_6$ (423.1). Calculated, %: C, 62.41; H, 5.00; N, 9.92.

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] propanoate (11b). 0.18 g, Yield 41% white crystals, mp 160-161 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.65 (1H, s, OH); 10.46 (1H, d, *J* 6.0, NH); 8.24 (1H, d, *J* 9.0, ArH); 7.65–7.28 (7H, m, ArH); 6.76 (1H, d, *J* 6.0, NH); 6.67 (1H, d, *J* 9.0, ArH); 4.66–4.59 (2H, m, 2CH); 3.73 (3H, s, OCH_3); 1.49 (6H, d, *J* 6.0, $2CH_3$). ^{13}C NMR spectrum, δ, ppm: 173.1 (C=O ester); 172.8 (C-OH); 171.2 (C=O amide); 171.0(C=O amide); 163.0

(C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 52.4 (OCH_3); 49.1 (CH); 48.2 (CH); 18.3 (CH_3); 17.3 (CH_3). Found, %: C, 63.03; H, 5.28; N, 9.49. For $C_{23}H_{23}N_3O_6$ (437.2). Calculated, %: C, 63.15; H, 5.30; N, 9.61.

Methyl 2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] 4-methylpentanoate (11c). 0.31 g, Yield 64% white crystals, mp 140-141 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.66 (1H, s, OH); 10.43 (1H, d, *J* 9.0, NH); 8.26 (1H, d, *J* 9.0, ArH); 7.65–7.28 (13H, m, ArH, NH); 6.67 (1H, d, *J* 9.0, ArH); 6.29 (1H, bs, NH); 4.61–4.59 (1H, m, CH); 3.65 (3H, s, OCH_3); 3.30–3.22 (2H, m, CH_2); 2.33–3.28 (2H, m, CH_2); 1.67–1.48 (9H, m, $3CH_3$). ^{13}C NMR spectrum, δ, ppm: 174.0 (C=O ester); 172.8 (C-OH); 171.4 (C=O amide); 171.1 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 129.3 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 116.2 (CHAr); 115.8 (C Ar); 94.7 (C Ar); 51.4 (OCH_3); 49.3 (CH); 39.3 (CH_2); 33.9 (CH_2); 29.2 (CH_2); 26.3 (CH_3); 24.5 (CH_3); 17.4 (CH_3). Found, %: C, 64.83; H, 5.96; N, 8.54. For $C_{26}H_{29}N_3O_6$ (479.2). Calculated, %: C, 65.12; H, 6.10; N, 8.76.

Methyl-3-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] propanoate (11d). 0.34 g, Yield 78% white crystals, mp 199-200 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.66 (1H, s, OH); 10.43 (1H, d, *J* 9.0, NH); 8.26 (1H, d, *J* 9.0, ArH); 7.65–7.28 (7H, m, ArH); 6.71–6.66 (2H, m, ArH, NH); 4.60–4.51 (1H, m, CH); 3.68 (3H, s, OCH_3); 3.59–3.55 (2H, m, CH_2); 2.55 (2H, t, *J* 6.0, CH_2); 1.47 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.7 (C=O ester); 172.8 (C-OH); 171.6 (C=O amide); 171.1 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 122.8 (CHAr); 116.2 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 51.7 (OCH_3); 49.4 (CH); 35.6 (CH_2); 33.7 (CH_2); 17.4 (CH_3). Found, %: C, 63.00; H, 5.46; N, 9.55. For $C_{23}H_{23}N_3O_6$ (437.2). Calculated, %: C, 63.15; H, 5.30; N, 9.61.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] 2-phenyl acetate (11e). 0.37 g, Yield 74% white crystals, mp 205-206 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.65 (1H, s, OH); 10.47 (1H, d, *J* 9.0, NH); 8.27 (1H, d, *J* 9.0, ArH); 7.38–7.28 (13H, m, ArH, NH); 6.67 (1H, d, *J* 9.0, ArH); 5.58 (1H, d, *J* 5.7, CH); 4.72–4.63 (1H, m, CH); 3.73 (3H, s, OCH_3); 1.47 (1H, d, *J* 9.0, CH). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.6 (C=O ester); 171.3 (C-OH); 171.2 (C=O amide);171.0 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 136.4 (C Ar); 136.3 (CHAr); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.0 (CHAr); 128.6 (CHAr); 128.4 (CHAr); 127.3 (CHAr); 127.2 (CHAr); 125.3 (CHAr);122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 56.6 (CH); 52.8 (OCH_3); 49.1 (CH); 17.2 (CH_3). Found, %: C, 67.33; H, 5.04; N, 8.41. for $C_{28}H_{25}N_3O_6$ (499.2). Calculated, %: C, 67.16; H, 5.01; N, 8.27.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] 1,5-pentandioate (11f). 0.24 g, Yield 48% white crystals, mp 180-181 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 16.61 (1H, s, OH); 10.46 (1H, d, *J* 9.0, NH); 8.26 (1H, d, *J* 9.0, ArH); 7.65–7.28 (7H, m, ArH); 6.68 (1H, d, *J* 6.0, NH); 6.65 (1H, d, *J* 9.0, ArH); 4.67–4.57 (1H, m, CH); 3.79 (3H, s, OCH_3); 3.73 (3H, s, OCH_3); 2.48–1.97 (4H, m, $2CH_2$);. ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), (75.0 MHz, $CDCl_3$), δ, ppm: 173.2 (C=O ester); 172.7 (C=O ester); 172.1 (C-OH); 171.5 (C=O amide); 171.2 (C=O amide); 162.9 (C=O amide); 141.0 (C Ar); 137.0 (C Ar); 133.6 (CHAr); 130.4 (CHAr); 129.3 (CHAr); 129.0 (CHAr); 128.9 (CHAr); 125.2 (CHAr); 122.8 (CHAr); 116.1 (CHAr); 115.8 (C Ar); 96.8 (C Ar); 52.5 (OCH_3); 51.7 (OCH_3); 51.0 (CH); 48.3 (CH); 28.9 (CH_2); 27.3 (CH_2); 17.3 (CH_3). Found, %: C, 61.07; H, 5.09; N, 8.12. For $C_{26}H_{27}N_3O_8$ (509.2). Calculated, %: C, 61.29; H, 5.34; N, 8.25.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-4-methyl-pentanamido] acetate (12a). 0.32 g, Yield 68% white crystals, mp 134-135 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.53 (1H, s, OH); 10.12 (1H, bs, NH); 8.23 (1H, d, *J* 8.0, ArH); 7.62–7.28 (7H, m, ArH); 6.64 (1H, d, *J* 8.0,

ArH); 6.12 (1H, bs, NH); 3.99 (2H, q, *J* 6.0, CH_2); 3.73 (3H, s, OCH_3); 3.41 (2H, d, *J* 6.0, CH_2); 2.23 (2H, t, *J* 6.0, CH_2); 1.68-1.42 (6H, m, $2CH_3$). ^{13}C NMR spectrum, δ, ppm: 173.1 (C=O ester); 173.0 (C-OH); 171.0 (C=O amide); 170.5 (C=O amide); 163.1 (C=O amide); 140.8 (C Ar); 137.2 (C Ar); 133.2 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 123.2 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 116.0 (C Ar); 96.7 (C Ar); 52.2 (OCH_3); 41.1 (CH_2); 38.9 (C-Leu); 36.0 (CH_2-Leu); 28.9 (CH_2-Leu); 26.6 (CH_3); 25.1 (CH_3). Found, %: C, 64.32; H, 5.67; N, 8.73. For $C_{25}H_{27}N_3O_6$ (465.2). Calculated, %: C, 64.50; H, 5.85; N, 9.03.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-4-methylpentanamido] propanoate (12b). 0.27 g, Yield 56% white crystals, mp 83-84 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.49 (1H, s, OH); 10.41 (1H, bs, NH); 8.26 (1H, d, *J* 8.0, ArH); 7.64–7.28 (7H, m, ArH); 6.66 (1H, d, *J* 8.0, ArH); 6.05 (1H, bs, NH); 4.65–4.55 (1H, m, CH); 3.75 (3H, s, OCH_3); 3.44 (2H, q, *J* 6.0, CH_2); 2.22 (2H, t, *J* 6.0, CH_2); 1.71–1.39 (9H, m, $3CH_3$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.6 (C=O ester); 173.0 (C-OH); 172.3 (C=O amide); 171.0 (C=O amide); 163.1 (C=O amide); 140.8 (C Ar); 137.2 (C Ar); 133.2 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 116.0 (C Ar); 96.7 (C Ar); 52.4 (OCH_3); 47.9 (CH); 38.9 (C- Leu); 36.3 (CH_2-Leu); 29.0 (CH_2-Leu); 26.6 (CH_3-Leu); 25.1 (CH_3-Leu); 18.5 (CH_3). Found, %: C, 64.86; H, 5.93; N, 8.54. For $C_{26}H_{29}N_3O_6$ (479.2). Calculated, %: C, 65.12; H, 6.10; N, 8.76.

Methyl-3-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-4-methylpentanamido] propanoate (12d). 0.37 g, Yield 78% white crystals, mp 110-111 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.47 (1H, s, OH); 10.13 (1H, bs, NH); 8.25 (1H, d, *J* 8.0, ArH); 7.63–7.28 (7H, m, ArH); 6.65 (1H, d, *J* 8.0, ArH); 6.11 (1H, bs, NH); 3.70 (3H, s, CH_2, OCH_3); 3.53–3.38 (4H, m, $2CH_2$); 2.53 (2H, t, *J* 6.0, CH_2); 2.16 (2H, t, *J* 6.0, CH_2); 1.68-1.36 (6H, m, $2CH_3$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.1 (C=O ester); 173.0 (C-OH); 172.8 (C=O amide); 171.0 (C=O amide); 163.1 (C=O amide); 140.8 (C Ar); 137.2 (C Ar); 133.2 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 116.0 (C Ar); 96.7 (C Ar); 51.8 (OCH_3); 38.9 (C- Leu); 36.5 (CH_2-Leu); 34.8 (CH_2); 33.9 (CH_2); 29.0 (CH_2-Leu); 26.6 (CH_3); 25.2 (CH_3). Found, %: C, 64.81; H, 5.93; N, 8.57. For $C_{26}H_{29}N_3O_6$ (479.2). Calculated, %: C, 65.12; H, 6.10; N, 8.76.

Methyl-2-[2-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-4-methylpentanamido] 2-phenylacetate (12e). 0.45g, Yield 84% white crystals, mp 118-119 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.51 (1H, s, OH); 10.15 (1H, bs, NH); 8.21 (1H, d, *J* 8.0, ArH); 7.60–7.23 (12H, m, ArH); 6.73 (1H, bs, NH); 6.63 (1H, d, *J* 8.0, ArH); 5.57 (1H, d, *J* 6.0, CH); 3.68 (3H, s, OCH_3); 3.43 (2H, q, *J* 6.0, CH_2); 2.24 (2H, t, *J* 6.0, CH_2); 1.69-1.41 (6H, m, $2CH_3$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.0 (C=O ester); 172.4 (C-OH); 171.5 (C=O amide); 170.9 (C=O amide); 163.0 (C=O amide); 140.8 (C Ar); 137.2 (C Ar); 136.6 (C Ar); 133.2 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 128.9 (CHAr); 128.4 (CHAr); 127.4 (CHAr); 125.1 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 116.0 (C Ar); 96.6 (C Ar); 56.4 (OCH_3); 52.6 (OCH_3); 38.9 (C- Leu); 35.9 (CH_2-Leu); 29.0 (CH_2-Leu); 26.6 (CH_3); 25.07 (CH_3).. Found, %: C, 68.48; H, 5.54; N, 7.62. for $C_{31}H_{31}N_3O_6$ (541.2). Calculated, %: C, 68.75; H, 5.77; N, 7.76.

Methyl 2-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] acetate (13a). 0.28 g, Yield 67% white crystals, mp 187-188 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.10 (1H, s, OH); 10.53 (1H, t, *J* 6.0, NH); 8.26 (1H, d, *J* 8.0, ArH); 7.63–7.28 (7H, m, ArH); 6.66 (1H, d, *J* 8.0, ArH); 6.26 (1H, bs, NH); 4.06 (2H, d, *J* 6.0, CH_2), 3.79-3.70 (5H, m, CH_2, OCH_3); 2.60 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.8 (C=O ester); 171.4 (C-OH); 170.6 (C=O amide); 170.3 (C=O amide); 162.9 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 133.3 (CHAr); 130.3 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.1 (CHAr); 115.9 (C Ar); 96.8 (C Ar); 52.3 (OCH_3); 41.3 (CH_2); 35.9 (CH_2); 35.3 (CH_2). Found, %: C, 62.12; H, 4.83; N, 9.62. For $C_{22}H_{21}N_3O_6$ (423.1). Calculated, %: C, 62.41; H, 5.00; N, 9.92.

Methyl 2-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] propanoate (13b). 0.27 g, Yield 63% white crystals, mp 130-131 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.2 (1H, s, OH); 10.35 (1H, t, *J* 6.0, NH); 8.20 (1H, d, *J* 8.0, ArH); 7.60–7.25 (7H, m, ArH); 6.63 (1H, d, *J* 8.0, ArH); 6.47 (1H, d, *J* 6.0, NH); 4.63–4.53 (1H, m, CH); 3.75-3.69 (5H, m, CH_2, OCH_3); 2.54 (2H, t, *J* 6.0, CH_2); 1.36 (3H, d, *J* 6.0, CH_3). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 173.4 (C=O ester); 172.7 (C-OH); 171.3 (C=O amide); 170.0 (C=O amide); 162.8 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 133.3 (CHAr); 130.2 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.1 (CHAr); 122.6 (CHAr); 116.2 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 52.3 (OCH_3); 48.0 (CH); 35.9 (CH_2); 35.3 (CH_2); 18.2 (CH_3). Found, %: C, 63.15; H, 5.30; N, 9.61. For $C_{23}H_{23}N_3O_6$ (437.2). Calculated, %: C, 62.95; H, 5.28; N, 9.49.

Methyl-2-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] 4-methyl pentanoate (13c). 0.32 g, Yield 67% white crystals, mp 131-132 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.06 (1H, s, OH); 10.30 (1H, t, *J* 6.0, NH); 8.25 (1H, d, *J* 8.0, ArH); 7.63–7.28 (7H, m, ArH); 6.67 (1H, d, *J* 8.0, ArH); 6.02 (1H, bs, NH); 3.77-3. 25 (5H, m, CH_2, OCH_3); 3.26 (2H, q, *J* 6.0, CH_2); 2.53 (2H, t, *J* 6.0, CH_2); 2.29 (2H, t, *J* 6.0, CH_2); 1.65-1.26 (6H, m, $2CH_3$). ^{13}C NMR spectrum, δ, ppm: 174.0 (C=O ester); 172.8 (C-OH); 171.3 (C=O amide); 170.4 (C=O amide); 162.9 (C=O amide); 140.9 (C Ar); 137.1 (C Ar); 133.4 (CHAr); 130.3 (CHAr); 129.2 (CHAr); 129.1 (CHAr); 125.2 (CHAr); 122.7 (CHAr); 116.1 (CHAr); 115.9 (C Ar); 96.7 (C Ar); 51.5 (OCH_3); 39.4 (C- Leu); 36.4 (CH_2-Leu); 35.5 (CH_2); 33.8 (CH_2); 29.1 (CH_2-Leu); 26.3 (CH_3); 24.4 (CH_3); Found, %: C, 65.00; H, 5.97; N, 8.63. For $C_{26}H_{29}N_3O_6$ (479.2). Calculated, %: C, 65.12; H, 6.10; N, 8.76.

Methyl-3-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] propanoate (13d). 0.32 g, Yield 73% white crystals, mp 115-116 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.10 (1H, s, OH); 10.28 (1H, t, *J* 6.0, NH); 8.22 (1H, d, *J* 8.0, ArH); 7.60–7.25 (7H, m, ArH); 6.64 (1H, d, *J* 8.0, ArH); 6.44 (1H, d, *J* 6.0, NH); 3.72-3.45 (7H, m, $2CH_2$, OCH_3); 2.53-2.44 (4H, m, $2CH_2$). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.9 (C=O ester); 172.7 (C-OH); 171.2 (C=O amide); 170.5 (C=O amide); 162.9 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 133.3 (CHAr); 130.2 (CHAr); 129.1 (CHAr); 129.0 (CHAr); 125.1 (CHAr); 122.6 (CHAr); 116.0 (CHAr); 115.8 (C Ar); 96.7 (C Ar); 51.7 (OCH_3); 36.0 (CH_2); 35.5 (CH_2); 34.9 (CH_2); 33.8 (CH_2). Found, %: C, 63.12; H, 5.22; N, 9.54. For $C_{23}H_{23}N_3O_6$ (437.2). Calculated, %: C, 63.15; H, 5.30; N, 9.61.

Methyl 2-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino)-propanamido] 2-phenylacetate (13e). 0.41 g, Yield 83% white crystals, mp 190-191 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.07 (1H, s, OH); 10.31 (1H, t, *J* 6.0, NH); 8.26 (1H, d, *J* 8.0, ArH); 7.63–7.29 (12H, m, ArH); 6.76 (1H, d, *J* 8.0, ArH); 6.67 (1H, d, *J* 6.0, NH); 5.61 (1H, d, *J* 6.0, CH), 3.77-3.71 (5H, m, CH_2, OCH_3); 2.60 (2H, t, *J* 6.0, CH_2). ^{13}C NMR spectrum, (75.0 MHz, $CDCl_3$), δ, ppm: 172.7 (C=O ester); 171.3 (C-OH); 171.2 (C=O amide); 169.8 (C=O amide); 162.9 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 136.4 (C Ar); 133.3 (CHAr); 130.2 (CHAr); 129.1 (CHAr); 129.1 (CHAr); 128.9 (CHAr); 128.5 (CHAr); 127.3 (CHAr); 125.2 (CHAr); 122.6 (CHAr); 116.1 (CHAr); 115.9 (C Ar); 96.8 (C Ar); 56.4 (CH); 52.7 (OCH_3); 36.0 (CH_2); 35.2 (CH_2). Found, %: C, 67.06; H, 4.72; N, 8.28. for $C_{28}H_{25}N_3O_6$ (499.2). Calculated, %: C, 67.33; H, 5.04; N, 8.41.

Dimethyl 2-[3-((1,2-dihydro-4-hydroxy-2-oxo-1-phenylquinolin-3-yl)carbonylamino) propanamido] 1,5-pentandioate (13f). 0.25 g, Yield 49% white crystals, mp 88-89 °C. ^{1}H NMR spectrum, (300 MHz, $CDCl_3$), δ, ppm (*J*, Hz): 17.11 (1H, s, OH); 10.26 (1H, t, *J* 6.0, NH); 8.16 (1H, d, *J* 8.0, ArH); 7.59–7.25 (7H, m, ArH); 6.76 (1H, d, *J* 8.0, ArH); 6.60 (1H, d, *J* 6.0, NH); 4.58 (1H, q, *J* 6.0, CH); 3.72-3.55 (7H, m, CH_2, $2OCH_3$); 2.52 (2H, t, *J* 6.0, CH_2); 2.37–1.94 (4H, m, $2CH_2$). ^{13}C NMR spectrum, δ, ppm: 173.2 (C=O ester); 172.7 (C=O ester); 172.2 (C-OH); 171.2 (C=O amide); 170.6 (C=O amide); 162.8 (C=O amide); 140.9 (C Ar); 137.2 (C Ar); 133.3 (CHAr); 130.3 (CHAr); 130.2 (CHAr); 129.0 (CHAr); 125.1 (CHAr); 122.5 (CHAr); 116.0 (CHAr); 115.9 (C Ar); 96.7 (C Ar); 52.4 (OCH_3);

52.1 (OCH_3); 51.6 (CH); 35.8 (CH_2); 35.3 (CH_2); 30.0 (CH_2); 27.1 (CH_2). Found, %: C, 61.02; H, 5.17; N, 8.06. For $C_{26}H_{27}N_3O_8$ (509.2). Calculated, %: C, 61.29; H, 5.34; N, 8.25.

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