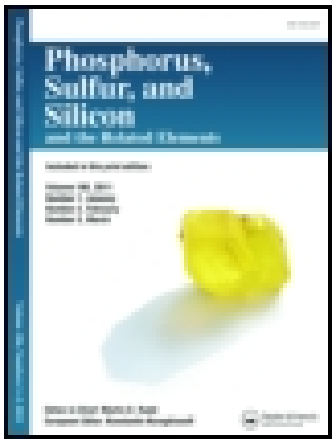

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# Synthesis of Some New Quinazoline Derivatives Analogues to MKC-442 and TNK 561

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# SYNTHESIS OF SOME NEW QUINAZOLINE DERIVATIVES ANALOGUES TO MKC-442 AND TNK 561

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*A series of different acyclo quinazoline nucleosides* ***6****,* ***7****,* ***8****,* ***10****,* ***12****,* ***13****, and* ***14*** *have been synthesized. The site of glycosylation was confirmed by* $^{1}$*H-NMR and* $^{13}$*C-NMR spectroscopy.*

*Keywords:* Acyclo quinazoline nucleosides; MKC-442; TNK 561



A number of quinazolin-4-one derivatives have been found to exhibit high activity against a variety of microbes parasitizing animals and plants.[1–4] Some quinazoline and their condensed derivatives show antiviral, CNS-depressant, anticonvulsant, antimalaric, and anticancer.[5–8] A major challenge facing medicinal chemistry over the next few years will be the development of drugs with significantly improved resistance profiles for chronic us as anti-HIV combination therapy. An important component of such regimens will be nonnucleoside inhibitors of HIV-1 reverse transcriptase (NNRTI's). NNRTs are a class of structurally divers aromatic compounds such as HEPT, MKC-442, and thiocarboxanilides,[9,10] Structural studies have revealed that NNRTIs inihibit HIV-1 RT by binding to an allosteric site, approximately 10 Å from the polymerase active site,[11–13] causing a distortion of the catalytic aspartite triad.[14] The high selectivity of NNRTIs for HIV-1 RT over HIV-2 RT and cellular polymerases contributes to lower cellular toxicity

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level than nucleoside analogues (NRTIs) such as AZT, ddI or ddC. As a part of our program of research on the synthesis of new glycosides[15–20] with considerable biological activity, we report in this paper the synthesis of a new class of non-nucleosides analogues to MKC-442 and TNK-561.

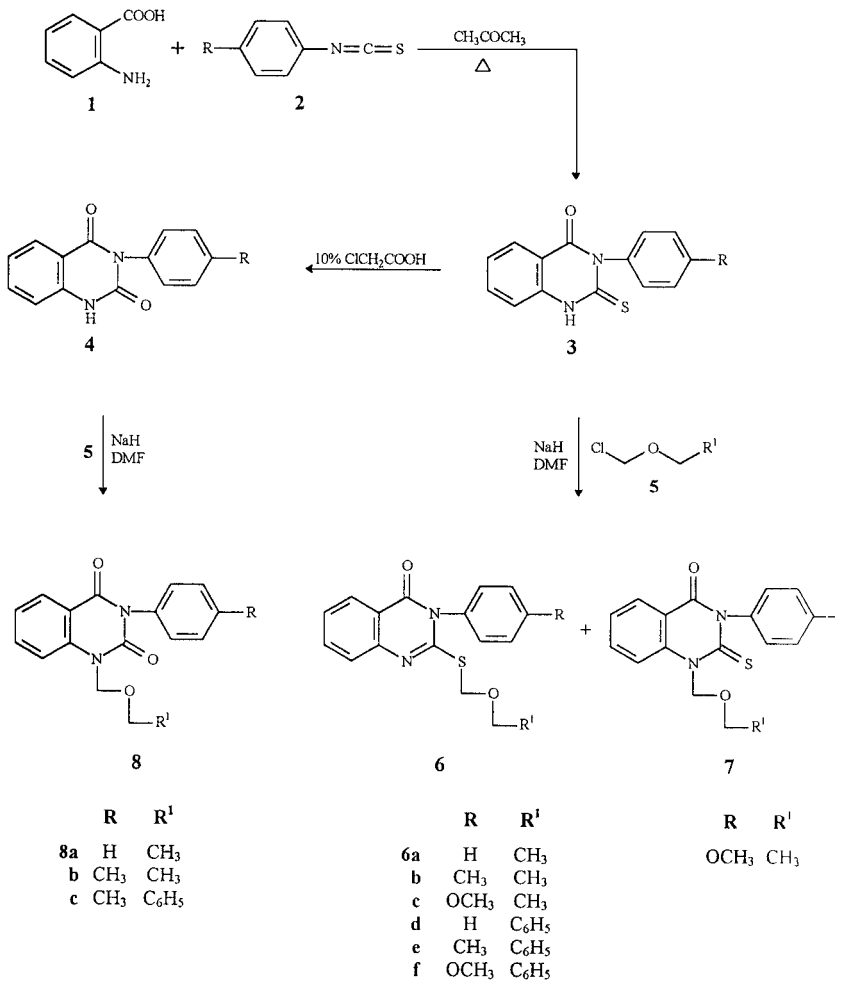
## RESULTS AND DISCUSSION

3-Aryl-2-thio-quinazolin-4-ones **3** were prepared in high yields in two steps from the reaction of anthranilic acid **1** with aryl isothiocyanates **2** according to reported procedures.[21] Compounds **3** or **4** can be coupled with different compounds **5**, **9** and **11** to give a new series of quinazoline acyclonucleosides. For example **3** or **4** reacted with chloromethyl ethyl ether or chloromethyl benzyl ether **5** in the presence of sodium hydride in dry dimethylformamide at room temperature to furnish the corresponding $S^2$-acyclonucleosides **6a–f** or $N^1$-derivatives **8a–c** in high yields (Scheme 1). Only the $S^2$-nucleoside **6c** and $N^1$-nucleoside **7** were obtained in the reaction of **3c** with chloromethyl ethyl ether **5** as the major and minor products, respectively. The products **6c** and **7** were easily separated by silica gel column chromatography and fully characterized by elemental and spectral analysis.

The site of glycosylation of compound **3** was confirmed from their $^{13}$C-NMR spectral. Thus, the observed shifts of C-2 (160.48 ppm) in **6c** and C-2 (176.38 ppm) in **7** clearly show glycosidation on a sulfur atom $S^2$ in quinazoline derivative **6c** and on a nitrogen atom $N^1$ in another derivative **7**, respectively (see Experimental part). Similarly, compounds **3** reacted with bromoethylacetate **9** or isopropylidenedioxy propyl chloride **11** in the presence of NaH and DMF to give the corresponding acyclo quinazoline S-nucleosides **10** and **12**, respectively (Scheme 2).

TLC of the acyclonucleosides **10** and **12** showed that single compounds were produced and their structures were further confirmed by elemental analysis and spectral data (see Experimental part).

Finally, removal of the protecting groups from the glycon moieties of **10** and **12** were achieved by treatment of **10** with methanolic ammonia and **12** with acetic acid to afforded the free acylcic nucleosides **13** and **14** receptively as the only isolated product (as tested by TLC analysis) in good yields. The structure of **13a** has been proved by $^1$H-NMR and $^{13}$C-NMR spectrometry in DMSO solution. A strong downfield shift of C-2 signal (160.69 ppm) is an unequivocal indication of the position of alkylation as well as of the disappearance of acetoxy protons in its $^1$H-NMR (see Experimental part).

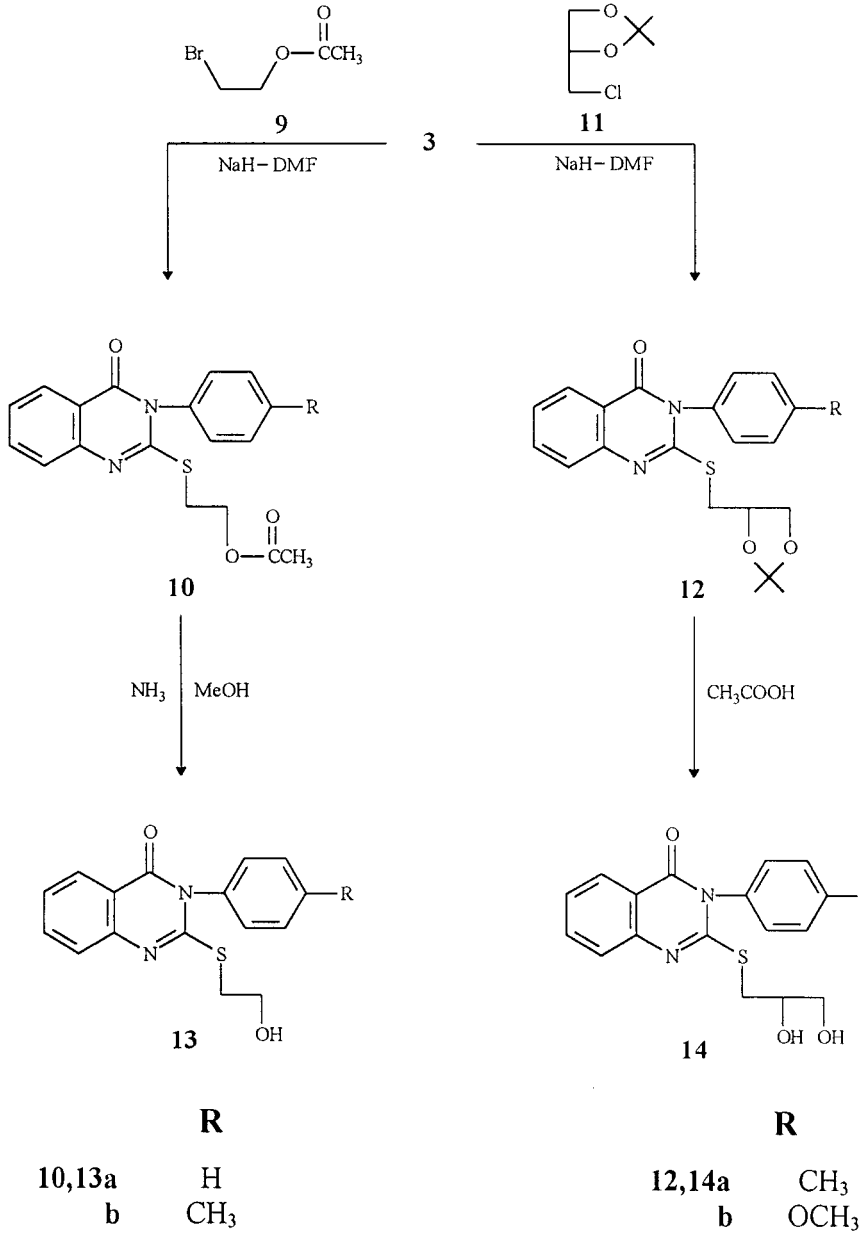



**SCHEME 1**

In conclusion, we have achieved a regiospecific synthesis of interesting quinazoline acylconucleosides by the reaction of substituted quinazoline-2-(1*H*)-thiones and their corresponding ketoneses with compounds **5**, **9**, **11**. The obtained quinazoline acycloncleosides are now under biological evalution.

## EXPERIMENTAL

NMR spectra were recorded on a Brucker 250 FT NMR spectrometer TMS as internal standard. MS were recorded on a variant mat 311




| | R | | R |
|---|---|---|---|
| 10,13a | H | 12,14a | $CH_3$ |
| b | $CH_3$ | b | $OCH_3$ |

**SCHEME 2**

A spectrometer. MS were recorded on a kratos MS-50 spectrometer. Results of elemental analysis were in acceptable range.

## General Procedure for Compound 5, 6, 7, 8, 10, and 12

Quinazoline derivatives **3** or **4** (5 mmol) and sodium hydride (6 mmol) in 20 mL dry DMF, stirring at room temperature 1 h. Compound **5**, **9**, or **11** (5.5 mmol) was added and the reaction mixture was stirred 24 h untill TLC shows no starting material left. Evaporated the solvent under vacuum, the residue was dissolved in 30 mL ethylacetate and 20 mL of $H_2O$. The extracted organic layer was dried over $Na_2SO_4$ and the solvent evaporated under vacuum, the residue was purified by silica gel column chromatography (cyclohoxane/ethylacetate, 90/10, v/v).



### *2-Ethoxymethylthio-3-phenyl-quinazolin-(3H)-4-one (6a)*

Yield 80%; m.p. 142–144°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$), $\delta$ 8.11-7.43 (m, 8H, Ar-H), 5.41 (s, 2H, H-1′), 3.57 (m, 2H, OC$\underline{H}_2$ $CH_3$), 1.13 (t, $J$ = 14.04 Hz, $OCH_2C\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$), $\delta$ 135.99, 134.85, 129.68, 129.34, 129.29, 126.49, 126.02, 119.64 (Ar-C), 72.25 (C-1′), 64.59 ($O\underline{C}H_2CH_3$), 14.56 ($OCH_2\underline{C}H_3$); Anal. cald for $C_{17}H_{16}N_2O_2S$ (312.31) C, 65.37; H, 5.16; N, 8.97 found C, 65.19; H, 5.00; N, 9.13%.

### *2-Ethoxymethylthio-3-tolyl-quinazolin-(3H)-4-one (6b)*

Yield 75%; m.p. 140–141°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.25-7.43 (m, 8H, Ar-H), 5.87 (s, 2H, H-1′), 3.69 (m, 2H, OC$\underline{H}_2$ $CH_3$), 3.18 (s, 3H, $CH_3$-tolyl), 1.27 (t, 3H, $J$ = 9.13 Hz, $CH_2C\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 160.78 (C-2), 155.92 (C-4), 146.90, 139.63, 134.44, 131.33, 128.81, 128.14, 126.49, 126.06, 119.63 (Ar-C), 72.34 (C-1′), 64.46 ($O\underline{C}H_2CH_3$), 14.77 ($CH_3$-tolyl), 14.56 ($OCH_2\underline{C}H_3$); Anal. cald for $C_{18}H_{18}N_2O_2S$ (326.33) C, 66.25; H, 5.56; N, 8.58. found C, 66.49; H, 5.33; N, 8.66%.

### *2-Ethoxymethylthio-3-(4-methoxyphenyl)-quizazolin-(3H)-4-one (6c)*

Seperated by silica gel column chromatography (cyclohexane/ethylacetate 90/10, v/v) as fraction (1); Yield 72%; m.p. 133–134°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.31-6.95 (m, 8H, Ar-H), 5.70 (s, 2H, H-1′), 3.75 (m, 2H, $OC\underline{H}_2CH_3$), 3.60 (s, 3H, $OCH_3$), 1.25 (t, $J$ = 6.13 Hz, 3H, $OCH_2C\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 160.84, (C-2), 159.40 (C-4), 147.53, 134.51, 130.14, 129.07, 127.44, 127.17, 126.32, 125.91, 125.25, 124.39, 114.41 (Ar-C), 72.96 (C-1′), 64.39 ($O\underline{C}H_2CH_3$), 55.38 ($OCH_3$),

14.02 ($OCH_2\underline{C}H_3$); Anal cald for $C_{18}$ $H_{18}$ $N_2O_3S$ (342.33) C, 63.15; H, 5.30; H, 8.18; found C, 62.96; H, 5.55; N, 7.00.

### *2-Benzyloxymethylthio-3-phenyl-quinazolin-(3H)-4-one (6d)*

Yield 67%; m.p. 100–102°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 7.96-7.15 (m, 14H, Ar-H), 5.33 (s, 2H, H-1′), 4.35 (s, 2H, $OC\underline{H_2}Ph$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 160.80 (C-2), 155.77 (C-4), 146.92 137.32, 135.98, 134.84, 129.78, 129.70, 129.30, 128.21, 127.74, 127.55 (Ar-C), 87.89 (C-1′), 70.82 ($O\underline{C}H_2Ph$); MS: m/z 374 ($M^+$); Anal. cald for $C_{22}H_{18}N_2O_2S$ (374.41) C, 70.57; H, 4.85; N, 7.48 found C, 70.70; H, 4.75; N, 7.76%.

### *2-Benzyloxymethylthio-3-tolyl-quinazolin-(3H)-4-one (6e)*

Yield 78%; m.p. 120–121°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 7.89-7.05 (m, 13H, Ar-H), 5.26 (s, 2H, H-1′), 4.29 (s, 2H, $OC\underline{H_2}Ph$), 3.13 (s, 3H, $CH_3$-tolyl); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 161.50 (C-2), 156.67 (C-4), 1473.56, 139.99, 137.97, 135.43, 133.97, 129.62, 128.55, 128.25, 127.11, 126.64 (Ar-C), 72.67 (C-1′), 71.45 ($O\underline{C}H_2Ph$), 21.40 ($CH_3$-tolyl); MS: m/z 388 ($M^+$); Anal. cald for $C_{23}H_{20}N_2O_2S$ (388.48) C, 71.10; H, 5.19; N, 7.21; found C, 71.20; H, 5.59; N, 7.25%.

### *3-Benzyloxymethylthio-3-(4-methoxyphenyl)-quinazolin-(3H)-4-one (6f)*

Yield 82%; m.p 105–107°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.28-7.45 (m, 13H, Ar-H), 5.48 (s, 2H, H-1′), 4.68 (s, 2H, $OC\underline{H_2}Ph$), 3.66 (s, 3H, $OCH_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) 160.49 (C-2), 156.21 (C-4), 147.45 138.99, 134.52, 130.13, 128.35, 127.94, 127.85, 127.16, 126.33, 125.96 (Ar-C); MS: m/z 404 ($M^+$); Anal. cald for $C_{23}H_{20}N_2O_3S$ (404.48) C, 68.30; H, 4.98; N, 6.93 found C, 68.09; H, 5.18; N, 6.86%.

### *1-Ethoxymethyl-3-(4-methoxyphenyl)-2-thio-1,2,3,4-tetrahydroquinazolin-4-one (7)*

Seperated by silica gel column chromatography (cyclohexaane/ethyl-acetate 90/10, v/v) as fraction (2); Yield 20%; m.p. 138–139% as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.15-7.00 (m, 8H, Ar-H), 5.55 (s, 2H, H-1′) 3.86 (m, 2H, $OC\underline{H_2}CH_3$), 3.60 (s, 3H, $OCH_3$), 1.18 (t, $J = 8.61$ Hz, 3H $OCH_2C\underline{H_3}$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 176.36 (C=s), 158.68 (C-4), 139.56, 135.48, 131.83, 129.96, 128.49, 127.82, 127.35, 124.21, 123.17 (Ar-C), 72.96 (C-1′), 63.49 ($O\underline{C}H_2CH_3$), 55.93 ($OCH_3$), 14.96 ($OCH_2\underline{C}H_3$); Anal. cald for $C_{18}H_{18}N_2O_3S$ (342.33). C, 63.15; H, 5.30; N, 8.18 found C, 62.91; H, 4.07; N, 8.40%.

### *1-Ethoxymethyl-3-phenyl-1,2,3,4-tetrahydroquinazolin-2,4-dione (8a)*

Yield 71%; m.p 138–140°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.09-7.23 (m, 9H, Ar-H); 5.58 (s, 2H, H-1′), 3.67 (m, 2H, OC$\underline{H}_2$CH$_3$), 1.16 (t, $J$ = 5.00 Hz, 3H, OCH$_2$C$\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 161.26 (C-2), 150.82 (C-4), 139.73, 139.62, 136.01, 135.26, 128.82, 128.75, 128.13, 127.81, 123.22, 115.32 (Ar-C), 72.96 (C-1′), 63.54 (O-$\underline{C}$H$_2$CH$_3$), 14.78 (OCH$_2\underline{C}$H$_3$); MS: m/z 296 (M$^+$); Anal. cald for $C_{17}H_{16}N_2O_3$ (296.29) C, 68.91, H, 5.44, N, 9.45, found C, 69.08, H, 5.51, N, 9.33%.

### *1-Ethoxymethyl-3-tolyl-1,2,3,4-tetrahydroquinazolin-2,4-dione (8b)*

Yield 75%; m.p. 143–145°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.26-7.14 (m, 8H, Ar-H), 5.64 (s, 2H, H-1′), 3.74 (m, 2H, OC$\underline{H}_2$CH$_3$), 2.41 (s, 3H, CH$_3$-tolyl), 1.26 (t, $J$ = 10.04 Hz, 3H, OCH$_2$C$\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 161.99 (C-2), 151.83 (C-4), 139.77, 135.29, 132.64, 130.06, 128.03, 128.95, 127.92, 123.57, 115.99, 115.03 (Ar-C), 73.83 (C-1′), 64.72 (O$\underline{C}$H$_2$CH$_3$), 21.86 (CH$_3$-tolyl), 14.92 (OCH$_2\underline{C}$H$_3$); Anal. cald for $C_{18}H_{18}N_2O_3$ (310.35) C, 69.86; H, 5.85; N, 9.03 found C, 69.88; H, 5.90; N, 9.29%.

### *1-Benzyloxymethyl-3-tolyl-1,2,3,4-tetrahydro-quinazolin-2,4-dione (8c)*

Yield 74%; m.p. 145–146°C as a white powder; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.90-7.17 (m, 13H, Ar-H), 5.67 (s, 2H, H-1′), 4.84 (s, 2H, OC$\underline{H}_2$Ph), 2.36 (S, 3H, CH$_3$-tolyl); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 161.27 (C-2), 150.86 (C-4), 139.55, 137.66, 137.49, 135.21, 133.36, 129.26, 128.49, 128.07, 127.49, 123.24 (Ar-C), 73.07 (C-1′), 69.96 (O$\underline{C}$H$_2$Ph), 20.69 (CH$_3$-tolyl); Anal. cald for $C_{23}H_{20}N_2O_3$ (372.42), C, 74.18; H, 5.41; N, 7.52 found C, 74.05; H, 2.63; N, 7.31%.

### *2-(Acetoxyethylthio)-3-phenyl-quinazolin-(3H)-4-one (10a)*

Yield 77%; m.p. 130–132°C; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.10-8. 45 (m, 9H, Ar-H), 4.30 (t, $J$ = 12.91 Hz, 2H, H-1′), 3.40 (t, $J$ = 21.19 Hz, 2H, H-2′), 1.98 (s, 3H, COC$\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 170.02 (–$\underline{C}$OCH$_3$), 160.64 (C-2); 158.49 (C-4), 147.05, 135.78, 134.81, 129.77, 129.38, 129.32, 126.46, 125.91, 119.49 (Ar-C); 61.72 (C-1′), 30.00 (C-2), 20.53 (CO$\underline{C}$H$_3$); MS: m/z 340 (M$^+$). Anal. cald for $C_{18}H_{16}N_2O_3S$ (340.30) C, 63.51; H, 4.79; N, 8.23 found C, 63.78; H, 5.00; N, 8.10%.

***2-(2-Acetoxyethylthio)-3-tolyl-quinazolin-(3H)-4-one (10b)***

Yield 86%; m.p. 125–126°C; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.11-7.32 (m, 8H, Ar-H); 4.30 (t, $J = 13.40$ Hz, 2H, H1′), 3.41 (t, $J = 22.87$, 2H, H-2′) 2.43 (s, 3H, $CH_3$-tolyl), 2.00 (s, 3H, $COC\underline{H}_3$); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 189.98 ($\underline{C}OCH_3$), 180.04 (C-2), 156.74 (C-4), 147.01, 139.40, 134.73, 133.10, 129.84, 128.98, 126.42, 125.23, 125.08, 119.44, (Ar-C), 63.53 (C-1′), 61.68 (C-2′), 30.36 ($CH_3$-tolyl), 20.99 ($CO\underline{C}H_3$); MS: m/z 354 ($M^+$); Anal. cald for $C_{19}H_{18}N_2O_3S$ (354.42) C, 64.31; H, 5.12; N, 7.90 found C, 54.01; H, 5.03, N, 7.96%.

***2-(Isopropylidenedioxypropylthio)-3-tolyl-quinazolin-(3H)-4-one (12a)***

Yield 66%; m.p. 126–128°C; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 7.93-7.13 (m, 8H, Ar-H), 4.17 (m, 1H, H-2′), 3.90 (m, 2H, H-1′), 3.19 (m, 3H, H-3), 2.25 (s, 3H, $CH_3$-tolyl), 1.22 (s, 3H, $CH_3$-isopropyl), 1.08 (s, 3H, $CH_3$ isopropyl); $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 160.66 (C-2), 157.00 (C-4), 139.38, 134.69, 133.17, 129.86, 128.99, 126.44, 125.78, 119.44; (A-C) 108.00 (C-isopropyl) 73.62 (C-2′), 67.00 (C-1′), 34.79 (C-3′), 29.50 ($CH_3$-tolyl); 26.58, 26.20 ($2CH_3$-isopropyl); Anal. cald for $C_{21}H_{22}N_2O_3S$ (382.38) C, 65.96; 5.80; N, 7.32 found C, 66.07; H, 8.63; N, 7.09%.

***2-(Isopropylidenedioxypropylthio)-3-(4-methoxyphenyl)-quinazolin-(3H)-4-one (12b)***

Yield 63%; m.p. 131–133°C; $^1$H-NMR (DMSO-d$_{-6}$), 8.26-7.25 (m, 8H, Ar-H), 4.14 (m, 1H, H-2′), 3.91 (m, 1H, H-1′), 3.65 (s, 3H, $OC\underline{H}_3$), 3.36 (m, 1H, H-3′), 1.40 (s, 3H, $C\underline{H}_3$-isopropyl), 1.43 (s, 3H, $CH_3$ isopropyl) $^{13}$C-NMR (DMSO-d$_{-6}$), 160.51 (C-2), 147.52 (C-4), 134.56, 130.21, 130.12, 127.20, 126.14, 125.85, 119.76, 114.89, 114.85, (Ar-C), 109.59 (C-isopropyl); 74.32 (C-2′), 68.57 (C-1′), 55.33 ($OCH_3$), 35.33 (C-3′), 26.83, 26.87, ($2CH_3$-isopropyl); Anal. cald for $C_{21}H_{22}N_2O_{45}$ (398.37) C, 63.22; H, 5.57; N, 7.03 found C, 63.40; H, 5.39; N, 7.29%.

## General Procedure for Compound 13a,b

Saturated ammonia in methanol (20 mL) was added with stirring to a solutions of **10a** or **10b** in methanol (10 mL) at 0°C. The reaction mixture was stirred at room temperature 24 h (monitored by TLC analysis). The solvent was evaporated under vacuum and the residue purified by silica gel column chromatography (cyclohexane/ethylacetate, 50/50, v/v).

### *2-(2-Hydroxyethylthio)-3-phenyl-quinazolin-(3H)-4-one (13a)*

Yield 68%; m.p. 136–137°C; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.09-7.09 (m, 9H, Ar-H), 4.89 (br, 1H, OH), 3.66 (t, $J$ = 12.05 Hz, 2H, H-1′), 3.27 (t, $J$ = 12.68 Hz, 2H, H-2′), $^{13}$C-NMR (DMSO-d$_{-6}$) $\delta$ 160.89 (C-2), 157.38 (C-4), 147.19, 135.97, 134.79, 129.67, 129.35, 129.00, 126.47, 122.40, 119.44, 115.15 (Ar-C), 59.12 (C-1′), 34.81 (C-2); MS: m/z 298 ($M^+$); Anal. cald for $C_{16}H_{14}N_2O_2S$ (298.36) C, 64.41; H, 4.73; N, 9.39 found C, 64.34; H, 4.82; N, 9.35%.

### *2-(2-Hydroxyethylthio)-3-tolyl-quinazolin-(3H)-4-one (13b)*

Yield 64%; m.p. 142–144°C; $^1$H-NMR (DMSO-d$_{-6}$) $\delta$ 8.09-7.30 (m, 8H, Ar-H), 4.99 (m, 1H, OH), 3.66 (t, $J$ = 11.82 Hz, 2H, H-1′), 3.24 (t, $J$ = 12.71 Hz, 2H, H-2′), 2-38 (s, 3H, $CH_3$-tolyl); $^{13}$C-NMR (DMSO-d$_{-\delta}$) $\delta$ 161.34 (C-2), 158.27 (C-4), 147.80, 139.95, 135.36, 133.95, 130.47, 129.67, 127.09, 126.52, 126.33, 120.04 (Ar-C), 59.43 (C-1′), 35.42 (C-2′), 21.39 ($CH_3$-tolyl); MS: m/z 312 ($M^+$); Anal. cald for $C_{17}H_{16}N_2O_2S$ (312.78) C, 65.36; H, 5.16; N, 8.97 found C, 65.64; H, 5.28; N, 8.75%.

## General Procedure for Compounds 14a,b

Compounds **12a** or **12b** (1 mmol) was dissolved in 10 mL 90% $CH_3COOH$ and the reaction mixture was stirred at room temperature 24 h, untill the TLC shows no starting material left. The solvent was evaporated under vacuum and the residue purified by silica gel column chromatography (cyclohexane/ethylacetate, 50/50, v/v).

### *2-(2,3-Dihydroxypropylthio)-3-tolyl-quinazolin-(3H)-4-one (14a)*

Yield 80%; m.p. 108–109°C; Anal. cald for $C_{18}H_{18}N_2O_3S$ (342.31) C, 63.16; H, 5.30; N, 8.18 found C, 63.43; H, 5.51; N, 8.39%.

### *2-(2,3-Dihydroxypropylthio)-3-(4-methoxyphenyl)-quinazolin-(3H)-4-one (15b)*[22]

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