Synthesis of benzimidazole based 1,3,4-oxadiazole-1,2,3-triazole conjugates as glycogen synthase kinase-3β inhibitors with antidepressant activity in *in vivo* models.

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Dose-response curves of compounds 7q, 7b, 7e and 7n for GSK-3β assays.



Results are presented as the percentage of GSK-3 β inhibition in the presence of the tested compounds. Data are the mean \pm SEM of n = 2.

Spectral characterization of representative compounds:

(**7b**)



Proton NMR – 7b



Carbon-13 NMR – 7b



Carbon-13 NMR – 7b (Expanded)



ESI-MS – 7b







Proton NMR – 7d







Carbon-13 NMR – 7d (Expanded)



ESI-MS – 7d







Proton NMR – 7f



Carbon-13 NMR – 7f



Carbon-13 NMR – 7f (Expanded)



ESI-MS – 7f

1-((5-((1-(2-methoxyphenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole





Proton NMR – 7k



Carbon NMR – 7k



Carbon NMR – 7k (Expanded)



ESI-MS – 7k

1-((5-((1-(4-fluorophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7a)



Proton NMR-7a



Carbon NMR-7a





1-((5-((1-(2-chlorophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7c)



7c



7c



1-((5-((1-phenyl-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7e)





7e

1-((5-((1-(2-chloropyridin-3-yl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (**7g**)







7g

1-((5-((1-(4-methoxyphenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7h)





Sample code;-7h; m/z=487

Event#: 1 Q1 Scan(E+) Ret. Time : [0.327->0.336]-[0.150<->0.433] Scan# : [75->77]-[35<->99]



7h

1-((5-((1-(3,4-dichlorophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7i)







Event#: 1 Q1 Scan(E+) Ret. Time : [0.874->0.883]-[0.627<->0.919] Scan# : [199->201]-[143<->209]

7i

1-((5-((1-(2,4-dichlorophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (**7j**)





LabSolutions Analysis Report

<Sample Information>

Sample Name Sample ID Data Filename	: BOT10 : BOT10 : BOT10 001.lcd		
Method Filename	: general.lcm		
Batch Filename	: 22052014 MS.lcb		
Vial #	: 1-104	Sample Type	: Unknown
Injection Volume	: 0.4 uL		
Date Acquired	: 22-05-2014 12:18:04	Acquired by	: System Administrator
Date Processed	: 22-05-2014 12:19:06	Processed by	: System Administrator

MS Spectrum MssPeaks:31 Spectrum Mode: Averaged 0.168-0.186(39-43) Base Peak:528(175671) BG Mode: Cale Segment 1 - Event 1

NegativeLine#:2 R.Time:----(Scan#:----) MassPeaks:84 Spectrum Mode:Averaged 0.163-0.181(38-42) Base Peak:572(85890) BG Mode:Calc Segment 1 - Event 2



7j

1-((5-((1-(4-tert-butylphenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (71)







Event#: 1 Q1 Scan(E+) Ret. Time : [0.327->0.336]-[0.150<->0.433] Scan# : [75->77]-[35<->99]

7**1**



1-((5-((1-o-tolyl-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7m)





7m

1-((5-((1-(4-ethylphenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7n)







LabSolutions Analysis Report

<Sample Information>

Sample Name	: BOT14
Sample ID	: BOT14
Data Filename	: BOT 14 001.lcd
Method Filename	: general.lcm
Batch Filename	: 22052014 MS.lcb
Vial #	: 1-100
Injection Volume	: 0.4 uL
Date Acquired	: 22-05-2014 12:11:29
Date Processed	: 22-05-2014 12:12:31

Sample Type

: Unknown

Acquired by Processed by

: System Administrator : System Administrator





NegativeLine#:2 R.Time:----(Scan#:----) MassPeaks:13 Spectrum Mode:Averaged 0.216-0.234(50-54) Base Peak:530(229978) BG Mode:Calc Segment 1 - Event 2



7n

1-((5-((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (70)







<Sample Information>

: BOT15	
: BOT15	
: BOT15 001.lcd	
: general.lcm	
: 22052014 MS.lcb	
: 1-99	
: 0.4 uL	
: 22-05-2014 12:09:52	
: 22-05-2014 12:10:53	
	: BOT15 : BOT15 : BOT15 001.lcd : general.lcm : 22052014 MS.lcb : 1-99 : 0.4 uL : 22-05-2014 12:09:52 : 22-05-2014 12:10:53

Sample Type

- Acquired by Processed by
 - : System Administrator : System Administrator

m/z

=

: Unknown

MS Spectrum PositiveLine#:1 R.Time:----(Scan#:----) MassPeaks:98 Spectrum Mode:Averaged 0.168-0.186(39-43) Base Peak:492(108370) BG Mode:Cale Segment 1 - Event 1



1-((5-((1-(3,4-dimethylphenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7p)







Event#: 1 Q1 Scan(E+) Ret. Time : [0.680->0.689]-[0.486<->0.724] Scan# : [155->157]-[111<->165]

7p



1-((5-((1-(pyridin-3-yl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7q)





7q

1-((5-((1-(3-nitrophenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7r)







7r

1-((5-((1-(3-(trifluoromethyl)phenyl)-1H-1,2,3-triazol-4-yl)methylthio)-1,3,4-oxadiazol-2-yl)methyl)-2-(trifluoromethyl)-1H-benzo[d]imidazole (7s)









4-(4-((5-((2-(trifluoromethyl)-1H-benzo[d]imidazol-1-yl)methyl)-1,3,4-oxadiazol-2-ylthio)methyl)-1H-1,2,3-triazol-1-yl)benzonitrile (7t)







7t