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## Data Article

## Comprehensive data on a 2D-QSAR model for Heme Oxygenase isoform 1 inhibitors



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## ABSTRACT

The data have been obtained from the Heme Oxygenase Database (HemeOxDB) and refined according to the 2D-QSAR requirements. These data provide information about a set of more than 380 Heme Oxygenase-1 (HO-1) inhibitors. The development of the 2D-QSAR model has been undertaken with the use of CORAL software using SMILES, molecular graphs and hybrid descriptors (SMILES and graph together). The 2D-QSAR model regressions for HO-1 half maximal inhibitory concentration (IC<sub>50</sub>) expressed as pIC<sub>50</sub> (pIC<sub>50</sub> = -LogIC<sub>50</sub>) are here included. The 2D-QSAR model was also employed to predict the HO-1 pIC<sub>50</sub> values of the FDA approved drugs that are herewith reported.

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## Specifications Table

Subject area	Computational Chemistry
More specific subject area	Quantitative Structure-Activity Relationship (QSAR) modeling

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Type of data	Table, figure
How data was acquired	Statistical modeling and online databases
Data format	Raw and analyzed
Experimental factors	The whole dataset consists of 382 HO-1 inhibitors which were randomly split and divided into training, invisible training, calibration, and validation sets.
Experimental features	The 2D-QSAR models have been developed using CORAL software. Chemical structure descriptors and pIC <sub>50</sub> were used as variables.
Data source location	Department of Drug Sciences, Department of Mathematics and Computer Sciences, University of Catania, Italy
Data accessibility	With this article

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### Value of the data

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- HO-1 is a crucial enzyme involved in the catabolism of heme and overexpressed in a number of tumors with poor clinical outcome.
  - 2D-QSAR modeling data was generated to provide a method useful in finding or repurposing novel HO-1 inhibitors.
  - The model has also been used to predict the HO-1 pIC<sub>50</sub> for the FDA-approved drugs.
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## 1. Data

HO-1 is a crucial enzyme involved in the regioselective catabolism of heme. Strongly induced upon stressful condition, HO-1 is recognized to fulfil crucial roles in cytoprotection and in the maintenance of endogenous homeostasis, playing a role in metabolic, cardiovascular, and pulmonary diseases [1–3]. Nevertheless, under adverse circumstances it has been demonstrated that aberrant levels of HO-1 may sustain cancerous diseases. Therefore, its inhibition is of interest in all such pathological conditions [4–7]. QSAR models as well as other methods are regression, classification or statistical methods used in the chemical and biological sciences, helping in predicting variables or in understanding patterns [8–11]. Data here reported provide information about a set of HO-1 inhibitors, recovered from the Heme Oxygenase Database (HemeOxDB) together with their pIC<sub>50</sub> (–logIC<sub>50</sub>) [12]. These latter have been used in building up the first hybrid 2D-QSAR model embracing the all set of known HO-1 inhibitors. The model has also been used to predict the HO-1 pIC<sub>50</sub> for the Food and Drug Administration approved drugs. These latter predicted HO-1 pIC<sub>50</sub> data are also here reported.

## 2. Experimental design, materials and methods

### 2.1. Dataset preparation

The dataset consists of 382 HO-1 inhibitors which were randomly split three times and then divided into training (131 compounds), invisible training (131 compounds), calibration (60 compounds) sets for model development and a validation set (60 compounds) for invisible model validation. The three splits and four sets have been randomly generated, and their pIC<sub>50</sub> minimum, maximum and middle are reported in Table 1.

**Table 1**  
Analysis of biological endpoints the HO-1 models (pIC<sub>50</sub>).

Split	Set	Min	Max	Middle
Split 1	Sub-training	3.69	6.55	5.12
	Calibration	3.41	7.22	5.31
	Test	4	6.62	5.31
	Validation	4	7.22	5.61
Split 2	Sub-training	3.41	7.22	5.31
	Calibration	3.69	6.95	5.32
	Test	4	7.22	5.61
	Validation	3.98	6.56	5.27
Split 3	Sub-training	3.69	7.22	5.45
	Calibration	3.41	7.22	5.31
	Test	4	6.95	5.47
	Validation	3.78	5.77	4.77

**Table 2**  
Regression for the HO-1 pIC<sub>50</sub> models.

Model	Split	Regression equation
<b>Hybrid</b>	Split 1	$pIC_{50} = 0.0000163(\pm 0.0147044) + 0.0473151(\pm 0.0001566) * DCW(0,41)$
	Split 2	$pIC_{50} = -0.0264725(\pm 0.0163573) + 0.0471089(\pm 0.0001704) * DCW(0,33)$
	Split 3	$pIC_{50} = 0.0038812(\pm 0.0212544) + 0.0354836(\pm 0.0001711) * DCW(2,30)$
<b>SMILES</b>	Split 1	$pIC_{50} = 1.7303408(\pm 0.0126104) + 0.0966933(\pm 0.0004343) * DCW(0,36)$
	Split 2	$pIC_{50} = 2.1559955(\pm 0.0115205) + 0.0847448(\pm 0.0004112) * DCW(0,31)$
	Split 3	$pIC_{50} = 2.2807230(\pm 0.0150322) + 0.0670793(\pm 0.0004516) * DCW(2,30)$
<b>Graph</b>	Split 1	$pIC_{50} = 0.1566205(\pm 0.0185526) + 0.0603249(\pm 0.0002615) * DCW(0,40)$
	Split 2	$pIC_{50} = 0.0038015(\pm 0.0250024) + 0.0618955(\pm 0.0003421) * DCW(0,34)$
	Split 3	$pIC_{50} = -0.0000202(\pm 0.0224837) + .0724072(\pm 0.0003652) * DCW(2,70)$

## 2.2. 2D-QSAR model development

2D-QSAR models have been developed with the use of the software CORAL [13–15]. Once the splits and sets were determined, nine models were developed and statistical quality recorded. Differences of these models consist in the way molecular structures have been depicted for the software process. Thus, in Table 2 regressions for the HO-1 pIC<sub>50</sub> models using SMILES, molecular graphs and hybrid descriptors (SMILES and graph together) are reported. While in Table 3 is reported the statistical quality of models of the HO-1 pIC<sub>50</sub>.

## 2.3. 2D-QSAR model settings for the best model [hybrid model split 1]

Fig. 1 shows a CORAL screenshot with settings for hybrid model split 1. While in Table 4, the complete list of SMILES and their distribution into the sub-training (+), calibration (–), test (#) and validation (\*) sets for HO-1 pIC<sub>50</sub> hybrid model split 1 is reported. These data may be prospectively used in finding novel models for HO-1 inhibition.

**Table 3**  
Statistical quality for models of HO-1 pIC<sub>50</sub>.

Model	Split	Set	$T^*$	$N^*$	$n$	$r^2$	$q^2$	$s$	$F_{\text{calc}}$	$F_{(0.05,1,n-2)}$	$p$ -value
<b>Hybrid</b>	Split 1	Sub-training	0	41	131	0.8085	0.8033	0.337	545	253.33	0.034
		Calibration			131	0.8029	0.7971	0.390	526	253.33	0.035
		Test			60	0.8183	0.8053	0.381	261	252.12	0.049
	Split 2	Validation	60	0.8291	0.398	281	252.12	0.047			
		Sub-training	0	33	131	0.7782	0.7721	0.414	453	253.33	0.037
		Calibration			131	0.8187	0.8130	0.349	582	253.33	0.033
	Test	60			0.8888	0.8801	0.302	464	252.12	0.037	
	Split 3	Validation	60	0.7940	0.515	223	252.12	0.053			
		Sub-training	2	30	131	0.7263	0.7177	0.427	342	253.33	0.043
		Calibration			131	0.7265	0.7192	0.438	343	253.33	0.043
	Test	60			0.8189	0.8037	0.502	262	252.12	0.049	
	<b>SMILES</b>	Split 1	Validation			60	0.8204	0.562	265	252.12	0.049
Sub-training					131	0.6933	0.6849	0.427	292	253.33	0.047
Calibration					131	0.6590	0.6497	0.505	249	253.33	0.050
Test					60	0.5008	0.4714	0.569	58	252.12	0.100
Split 2		Validation			60	0.6290	0.551	98	252.12	0.080	
		Sub-training	0	34	131	0.6508	0.6415	0.520	240	253.33	0.051
		Calibration			131	0.6883	0.6790	0.455	285	253.33	0.047
		Test			60	0.7593	0.7400	0.446	183	252.12	0.059
Validation		60			0.4645	0.688	50	252.12	0.112		
Split 3		Sub-training	2	70	131	0.6141	0.6010	0.507	205	253.33	0.057
		Calibration			131	0.6096	0.5994	0.527	201	253.33	0.056
		Test			60	0.6697	0.6431	0.620	118	252.12	0.073
	Validation	60			0.5006	0.614	58	252.12	0.104		
<b>Graph</b>	Split 1	Sub-training	0	40	131	0.7115	0.7035	0.414	318	253.33	0.047
		Calibration			131	0.7077	0.6980	0.470	312	253.33	0.045
		Test			60	0.6839	0.6616	0.483	126	252.12	0.071
		Validation			60	0.6751	0.502	121	252.12	0.072	
	Split 2	Sub-training	0	34	131	0.6717	0.6613	0.504	264	253.33	0.049
		Calibration			131	0.7293	0.7209	0.444	348	253.33	0.043
		Test			60	0.7247	0.6941	0.452	153	252.12	0.064
		Validation			60	0.7021	0.543	137	252.12	0.068	
	Split 3	Sub-training	2	70	131	0.7336	0.7247	0.421	355	253.33	0.042
		Calibration			131	0.7336	0.7263	0.441	355	253.33	0.042
		Test			60	0.7070	0.6811	0.573	140	252.12	0.067
		Validation			60	0.5712	0.659	77	252.12	0.090	

$T^*$  and  $N^*$  are preferable values for the threshold and the number of epochs, respectively;  $n$  is the number of compounds in the set;  $r^2$  is the correlation coefficient;  $q^2$  is the cross-validated correlation coefficient;  $s$  is the root-mean-square error;  $F$  is the Fisher  $F$  ratio;  $F_{(0.05,1,n-2)}$  is the 0.05-quantile of the Fisher's distribution  $F_{(1,n-2)}$ ;  $p$ -value is the Fisher test's significance level.

#### 2.4. QSAR hybrid model split 1 validation

The endpoints of the FDA-approved drugs were determined in order to additionally validate the model. The whole set composed of 1428 drugs was refined in order to remove quaternary ammonium salts, and compounds with too long SMILES (not elaborated by CORAL), and compounds containing atoms not enumerated in the model (Al, Fe, Gd, etc.). Overall, the whole set was reduced to 1376 compounds and these were evaluated with hybrid model resulting from split 1. Over 1376 compounds, 995 have been defined as outliers by the model since they fall outside the domain of applicability. Table 5 reports the SMILES and predicted HO-1 pIC<sub>50</sub> for these FDA approved drugs evaluated with the hybrid model split 1.

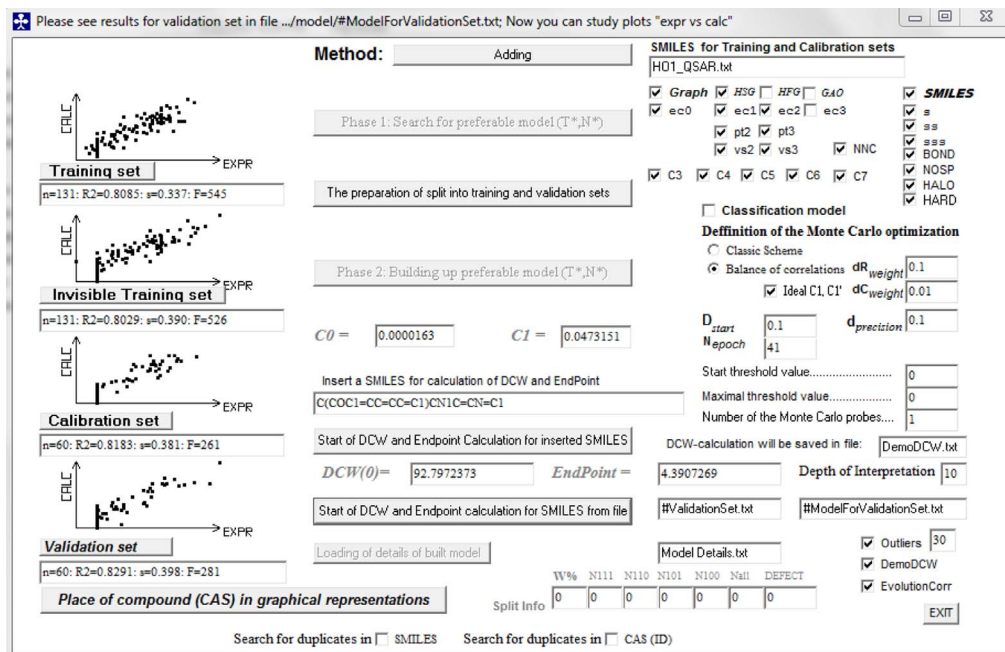


Fig. 1. CORAL software validation method for the HO-1 pIC<sub>50</sub> hybrid model [hybrid model split 1].

Table 4

List of SMILES and their distribution into the sub-training (+), calibration (-), test (#) and validation (\*) for hybrid model split 1.

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
+	HemeOxDB131	5.046
+	HemeOxDB306	4
+	HemeOxDB272	4
+	HemeOxDB247	4
+	HemeOxDB55	6.699
+	HemeOxDB20	6.155
+	HemeOxDB81	5.569
+	HemeOxDB34	5.924
+	HemeOxDB162	4.717
+	HemeOxDB59	5.678
+	HemeOxDB113	5.301
+	HemeOxDB185	4.469
+	HemeOxDB219	4.102
+	HemeOxDB107	5.398
+	HemeOxDB197	4.377
+	HemeOxDB196	4.398
+	HemeOxDB99	5.398
+	HemeOxDB91	5.456
+	HemeOxDB258	4
+	HemeOxDB369	4
+	HemeOxDB95	5.444
+	HemeOxDB122	5.222
+	HemeOxDB373	4
+	HemeOxDB125	5.208
+	HemeOxDB35	5.921
+	HemeOxDB23	6.155
+	HemeOxDB261	4

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
+ HemeOxDB80	BrC1=CC=C(C=C1)C(=O)CN1C=NC=N1	5.569
+ HemeOxDB198	IC1=CC=C(OCCCCCN2C=CN=C2)C=C1	4.377
+ HemeOxDB339	COC1=CC=C(CCN2CCC(CC2)NC2=NC3=CC=CC=C3N2)C=C1	4
+ HemeOxDB143	C[C@H]1CO[C@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	4.921
+ HemeOxDB233	COC(=O)NC1=NC2=C(N1)C=CC(=C2)C(=O)C1=CC=C(F)C=C1	4
+ HemeOxDB178	[H]C1=CC2=C(O(CSCCCN3C=CN=C3)=N2)C=C1	4.51
+ HemeOxDB280	IC1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
+ HemeOxDB92	C(CCC1=CC=CC=C1)CN1C=CN=C1	5.456
+ HemeOxDB275	C(C1CCCC1)N1C(CN2CCCC2)=NC2=C1C=CC=C2	4
+ HemeOxDB377	ON=C(N1C=CN=C1)C(=O)C1=CC=C(C1)C=C1	3.987
+ HemeOxDB157	O=C(CN1C=NC=N1)C1=CC=C2OCCOC2=C1	4.745
+ HemeOxDB187	C1C1=CC2=C(S(CSCCCCN3C=CN=C3)=N2)C=C1	4.44
+ HemeOxDB330	CN1C(NCCC2=CN=C2)=NC2=CC=CC=C12	4
+ HemeOxDB100	C1C1=CC=C(C=C1)C(=O)CN1C=CN=C1	5.398
+ HemeOxDB138	C1C1=CC=C(CSC(CN2C=CN=C2)C2=CC=C(C1)C=C2)C=C1	4.959
+ HemeOxDB43	NC1=CC=CC(S[C@@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)=C1	5.824
+ HemeOxDB120	C1C1=CC(C1)=C(COC(CN2C=CN=C2)C2=CC=C(C1)C=C2)C=C1	5.237
+ HemeOxDB210	C1C1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C(C1)=C1	4.208
+ HemeOxDB358	O=C(CCC1=CC=CC=C1)CN1C=CN=C1C1=CC=CC=C1	4
+ HemeOxDB340	CS(=O)(=O)C1=NC=CN1CC(=O)CCC1=CC=CC=C1	4
+ HemeOxDB366	O=C(CCC1=CC=CC=C1)CN1N=CC=N1	4
+ HemeOxDB234	O=C(NCCCN1C=CN=C1)C1=CC=CC=C1	4
+ HemeOxDB50	BrC1=CC(=CC=C1)C(=O)CN1C=NC=N1	5.745
+ HemeOxDB16	C1C1=CC=C(CCCCN2C=CN=C2)C=C1	6.301
+ HemeOxDB379	CCC(O)CN1C=CN=C1	3.883
+ HemeOxDB164	C[C@H]1CO[C@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	4.699
+ HemeOxDB308	C(C(C1(CN2N=CC=N2)OCCO1)C1=CC=CC=C1	4
+ HemeOxDB365	O=C(CCC1=CC=CC=C1)CN1N=C2C=CC=CC2=N1	4
+ HemeOxDB154	CC1=CC=C(C=C1)S(=O)(=O)OC[C@H]1CO[C@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	4.77
+ HemeOxDB278	O=N(=O)C1=CC=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=C1	4
+ HemeOxDB352	CSC1=NN=NN1CC(=O)CCC1=CC=CC=C1	4
+ HemeOxDB248	IC1=CC=C(OCCCN2C=CN=C2)C=C1	4
+ HemeOxDB189	NC1=CC(S[C@@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)=CC=C1	4.42
+ HemeOxDB245	[O-][N+](=O)C1=CC=C(OCCCN2C=CN=C2)C=C1	4
+ HemeOxDB349	CSC1=NN(CC(=O)CCC2=CC=CC=C2)C=N1	4
+ HemeOxDB361	O=C(CCC1=CC=CC=C1)CN1C=NC(C#N)=C1C#N	4
+ HemeOxDB132	O=C(CCC1=CC=CC=C1)CN1C=NC(=N1)C1=CC=CC=C1	5.046
+ HemeOxDB317	CC1=NC=CN1CC(=O)CCC1=CC=C(Br)C=C1	4
+ HemeOxDB133	O=C(CCC1=CC=CC=C1)CN1N=CN=N1	5.018
+ HemeOxDB282	C1C1=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=CC(C1)=C1	4
+ HemeOxDB363	O=C(CCC1=CC=CC=C1)CN1C=NC2=CC=CC=C12	4
+ HemeOxDB274	O=N(=O)C1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
+ HemeOxDB148	NC1=CC=C(S[C@@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	4.83
+ HemeOxDB49	OC1=CC=C(O[C@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	5.745
+ HemeOxDB270	BrC1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
+ HemeOxDB37	C1C1=C(C1)C=C(C=C1)C(=O)CN1C=CN=C1	5.907
+ HemeOxDB364	O=C(CCC1=CC=CC=C1)CN1N=C(N=C1)C1=CC=CC=C1)C1=CC=CC=C1	4
+ HemeOxDB294	COC(=O)NC1=NC2=CC(=CC=C2N1)C(=O)C1=CC=CC=C1	4
+ HemeOxDB320	CN1CCN(CC1)C1=NC2=CC=CC=C2N1	4
+ HemeOxDB76	O=C(CCC1=CC=CC=C1)CN1C=NN=N1	5.585
+ HemeOxDB295	NCCC1=CN=CN1	4
+ HemeOxDB163	BrC1=CC=CC(OCCCCCN2C=NC=N2)=C1	4.699
+ HemeOxDB304	C(C(C1(CN2C=CC=N2)OCCO1)C1=CC=CC=C1	4
+ HemeOxDB61	C1C1=CC=C(CC[C@@H]2(CN3C=CN=C3)OC[C@@H](CSC3=CC=C(Br)C=C3)O2)C=C1	5.678
+ HemeOxDB112	C(C1=CC=CC=C1)C1=CC=C(C=C1)C1(CN2C=CN=C2)OCCO1	5.303
+ HemeOxDB205	CCN1C=CN=C1)C(=O)C1=CC=CC=C1	4.31
+ HemeOxDB38	C1C1=C(C1)C=C(C=C1)C(=O)CN1C=NC=N1	5.886
+ HemeOxDB380	C(N1C=NC=N1)C1(OCCO1)C1=CC=CC=C1	3.842
+ HemeOxDB17	C1C1=CC=C(CC[C@@H]2(CN3C=CN=C3)OC[C@@H](COC3=CC=CC=C3)O2)C=C1	6.229

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
+ HemeOxDB375	OC(CCC1=CC=CC=C1)CN1C=NC(=C1C1=CC=CC=C1)C1=CC=CC=C1	4
+ HemeOxDB67	C(N1C=CN=C1)C12CC3CC(CCC3)C1)C2	5.658
+ HemeOxDB172	C1C1=CC=C(CC[C@@]2(CN3C=CN=C3)OC[C@@H](CSC3=CC=NC=C3)O2)C=C1	4.602
+ HemeOxDB72	O=C(CCC1=CC=CC=C1)CN1C=NC=N1	5.602
+ HemeOxDB161	C1C1=CC=C(C=C1)C1(CN2C=CN=C2)OCCO1	4.721
+ HemeOxDB232	[O-][N+](=O)C1=CC=C(OCCCN2C=NC=N2)C=C1	4
+ HemeOxDB286	C1C1=CC2=C(SC(CCCCN3C=CN=C3)=N2)C=C1	4
+ HemeOxDB86	C(CC12CC3CC(CC(C3)C1)C2)N1C=CN=C1	5.523
+ HemeOxDB62	FC(F)(F)C1=CC=C(SC[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	5.678
+ HemeOxDB381	O=C(CCC1=CC=CC=C1)C[N+]=CC=NC=C1	3.788
+ HemeOxDB186	C1C1=CC=CC=C1C(N1C=CN=C1)C1=CC=CC=C1)C1=CC=CC=C1	4.456
+ HemeOxDB382	C1CC(CCC1NC1=NC2=CC=CC=C2N1)C1=CN=CN1	3.699
+ HemeOxDB127	FC1=CC=C(COC(CN2C=CN=C2)C2=CC=C(CCC3=CC=CC=C3)C=C2)C=C1	5.155
+ HemeOxDB173	OC1=C(C=CC=C1)C(=O)CCN1C=CN=C1	4.602
+ HemeOxDB31	IC1=CC=C(OCCCN2C=CN=C2)C=C1	6
+ HemeOxDB289	N1C=CN=C1	4
+ HemeOxDB378	COC(=O)NC1=NC2=C(N1)C=CC(=C2)S(=O)C1=CC=CC=C1	3.939
+ HemeOxDB214	C(CC1=CC=CC=C1)N1C=CN=C1	4.143
+ HemeOxDB203	OC(CCC1=CC=CC=C1)CN1C=CN=N1	4.357
+ HemeOxDB362	O=C(CCC1=CC=CC=C1)CN1C=NC=C1N(=O)=O	4
+ HemeOxDB212	BrC1=CC=CC(OCCCN2C=CN=C2)C=C1	4.161
+ HemeOxDB69	C1C1=CC=C(C(=O)CN2C=CN=C2)C(C1)=C1	5.658
+ HemeOxDB336	COC(=O)SC1=NC=CN1CC(=O)CCC1=CC=CC=C1	4
+ HemeOxDB130	C1C1=CC=C(CC[C@@]2(CN3C=CN=C3)OC[C@@H](COC3=CC=C(C1)C=C3)O2)C=C1	5.046
+ HemeOxDB242	C(CCN1C=CN=C1)CN1C=CN=C1	4
+ HemeOxDB58	FC(F)(F)C1=CN=C(SC[C@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	5.678
+ HemeOxDB284	BrC1=CC=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
+ HemeOxDB190	BrC1=CC=C(C=C1)C1(CN2C=NC=N2)OCCO1	4.42
+ HemeOxDB134	C1C1=CC=C(CC[C@@]2(CN3C=CN=C3)OC[C@@H](CN3C=CN=C3)O2)C=C1	5
+ HemeOxDB44	BrC1=CC=C(C=C1)C1=CC=C(C=C1)C(=O)CN1C=CN=C1	5.824
+ HemeOxDB13	C(CCC1=CC=C(CCCC[N]2=CCN=C2)C=C1)CN1C=CN=C1	6.398
+ HemeOxDB300	BrC1=CC=C(CNCC2=CN=CC=C2)C=C1	4
+ HemeOxDB119	NC1=CC=C(SC[C@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	5.237
+ HemeOxDB9	FC1=CC=C(OC[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	6.553
+ HemeOxDB327	C1C1=CC=C(C=C1)C1(CN1C=CN=C1)=N/NC1=CC=CC=C1	4
+ HemeOxDB353	FC(F)(F)C(=O)N1C=CN=C1	4
+ HemeOxDB273	FC(F)(F)C1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
+ HemeOxDB26	CC1=CC=C(C=C1)S(=O)(=O)C[C@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	6.097
+ HemeOxDB97	O=S(CCCN1C=CN=C1)C1=CC=CC=C1	5.432
+ HemeOxDB311	C12CC3CC1CC(C2)C3N1C=CN=C1	4
+ HemeOxDB165	C1C1=CC=C(CCC2(CN3C=CN=C3)OCCCO2)C=C1	4.699
+ HemeOxDB305	C(CC1(CN2C=CN=N2)OCCO1)C1=CC=CC=C1	4
+ HemeOxDB228	C(CCCN1C=CN=C1)CCN1C=CN=C1	4
+ HemeOxDB180	BrC1=CC=C(OCCCN2C=CN=C2)C=C1	4.509
+ HemeOxDB204	O/N=C(C/N1C=CN=C1)C1=CC=C(C1)C=C1	4.337
- HemeOxDB303	BrC1=NN(CC(=O)CCC2=CC=CC=C2)C(Br)=N1	4
- HemeOxDB267	C1C1=CC=CC=C1CN1C(CN2CCCC2)=NC2=C1C=CC=C2	4
- HemeOxDB60	BrC1=CC=CC(OCCCN2C=CN=C2)C=C1	5.678
- HemeOxDB201	C(N1C=CN=C1)C1=CC=CC=C1	4.357
- HemeOxDB259	C(N1CCCC1)C1=NC2=C(C=CC=C2)N1C(C1=CC=CC=C1)C1=CC=CC=C1	4
- HemeOxDB137	OC(CCC1=CC=CC=C1)CN1C=NC=N1	4.991
- HemeOxDB254	COC1=CC=C(CCN2CCC(CC2)NC2=NC3=C(C=CC=C3)N2CC2=CC=C(F)C=C2)C=C1	4
- HemeOxDB68	C1C1=CC=C(C=C1)C(=O)CN1C=NC=N1	5.658
- HemeOxDB227	C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@@H](COC3=CC=C(C=C3)C34CC5CC(CC(C5)C3)C4)O2)C=C1	4
- HemeOxDB372	O=C(NCCCN1C=CN=C1)NC1=CC=CC=C1	4
- HemeOxDB90	C1C[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	5.456
- HemeOxDB11	NC1=CC=C(SC[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	6.481
- HemeOxDB194	NC1=CC=C(SC[C@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	4.398

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
- HemeOxDB268	<chem>O=N(=O)C1=CC=CC=C1CN1C(CN2CCCC2)=NC2=C1C=CC=C2</chem>	4
- HemeOxDB281	<chem>C(CN1C(CN2CCCC2)=NC2=C1C=CC=C2)OC1=CC=CC=C1</chem>	4
- HemeOxDB337	<chem>COC1=CC=C(CCN2CCC(CC2)NC2=NC3=C(C=C(C)C(C)=C3)N2CC2=CC=C(F)C=C2)C=C1</chem>	4
- HemeOxDB310	<chem>C(CCN1C=NC2=CC=CC=C2N1)CCN1CCCC1</chem>	4
- HemeOxDB238	<chem>NC1=C(SC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)C=CC=C1</chem>	4
- HemeOxDB88	<chem>BrC1=CC=C(C=C=C1)C(=O)CN1C=CN=C1</chem>	5.495
- HemeOxDB223	<chem>C(CCN1C=NC=N1)COC1=CC=CC=C1</chem>	4.036
- HemeOxDB199	<chem>BrCC(=O)CCC1=CC=C(Br)C=C1</chem>	4.377
- HemeOxDB64	<chem>C1C=C(C1)C(C1)=C(C=C1)C(=O)CN1C=CN=C1</chem>	5.677
- HemeOxDB206	<chem>BrC1=C(OCCCN2C=CN=C2)C=CC=C1</chem>	4.276
- HemeOxDB156	<chem>O=C1OC2=C(C=CC=C2)N1CCCCN1C=CN=C1</chem>	4.752
- HemeOxDB331	<chem>COC(=O)C1=C(N(CC(=O)CCC2=CC=CC=C2)C=N1)C(=O)OC</chem>	4
- HemeOxDB77	<chem>C[C@H]1CO[C@](CCC2=CC=C(C)C=C2)(CN2C=CN=C2)O1</chem>	5.585
- HemeOxDB213	<chem>[H][C@]12CCCC[C@]1([H])OC(CCC1=CC=C(C)C=C1)(CN1C=CN=C1)O2</chem>	4.161
- HemeOxDB251	<chem>C1=CN(C=N1)C1=CC=CC=C1</chem>	4
- HemeOxDB220	<chem>OC(CN1C=NC=N1)(CN1C=NC=N1)C1=C(F)C=C(F)C=C1</chem>	4.097
- HemeOxDB65	<chem>FC1=CC=C(SC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)C=C1</chem>	5.658
- HemeOxDB175	<chem>COC1=CC=C(OC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)C=C1</chem>	4.553
- HemeOxDB341	<chem>CS(=O)(=O)C1=NC=NN1CC(=O)CCC1=CC=CC=C1</chem>	4
- HemeOxDB383	<chem>OC1=CC=C(CCC(=O)CN2C=CN=C2)C=C1</chem>	3.418
- HemeOxDB357	<chem>O=C(CCC1=CC=CC=C1)CN1C=CC=N1</chem>	4
- HemeOxDB169	<chem>BrC1=CN(CCC(=O)CCC2=CC=CC=C2)C=N1</chem>	4.658
- HemeOxDB195	<chem>CC(O)C(CC1=CC=C(C)C=C1)N1C=CN=C1</chem>	4.398
- HemeOxDB21	<chem>COC1=CC=C(CCC(O)CN2C=CN=C2)C=C1</chem>	6.155
- HemeOxDB14	<chem>CC(C)N1CCN(CC1)C1=CC=C(OC[C@H]2CO[C@](CN3C=NC=N3)(O2)C2=CC=C(C)C=C2)C=C1</chem>	6.387
- HemeOxDB338	<chem>COC1=CC=C(CCN2CCC(CC2)NC2=NC3=CC(C)C=C(C)C=C3N2CC2=CC=C(F)C=C2)C=C1</chem>	4
- HemeOxDB46	<chem>OC1=CC=C(SC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)C=C1</chem>	5.799
- HemeOxDB155	<chem>CC1=CC=C(C=C1)C(=O)CN1C=CN=C1</chem>	4.77
- HemeOxDB56	<chem>OC(CCN1C=CN=C1)C12CC3CC(CC(C3)C1)C2</chem>	5.699
- HemeOxDB1	<chem>OC(CCC1=CC=C(C)C=C1)CN1C=CN=C1</chem>	7.222
- HemeOxDB158	<chem>C1C1=CC2=C(SC(CCCN3C=CN=C3)=N2)C=C1</chem>	4.735
- HemeOxDB351	<chem>CSC1=NN(CCC(=O)CCC2=CC=CC=C2)C=N1</chem>	4
- HemeOxDB321	<chem>CCOC(=O)C1=NC=CN1CC(=O)CCC1=CC=CC=C1</chem>	4
- HemeOxDB250	<chem>CSCCC(N)C(O)=O</chem>	4
- HemeOxDB41	<chem>NC1=CC=C(OC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)C=C1</chem>	5.854
- HemeOxDB174	<chem>O=C(CN1C=CN=C1)C1=CC=CC=C1</chem>	4.553
- HemeOxDB293	<chem>FC1=CC=C(CN2C(NC3CCNCC3)=NC3=C2C=CC=C3)C=C1</chem>	4
- HemeOxDB177	<chem>C1C1=CC(C)C=C(C=C1)C1(CN2C=CN=C2)OCCO1</chem>	4.538
- HemeOxDB83	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@H](CSC3=CC=C(C)C=C3)O2)C=C1</chem>	5.553
- HemeOxDB239	<chem>NC(CC1=CN=CN1)C(O)=O</chem>	4
- HemeOxDB257	<chem>N#CC1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1</chem>	4
- HemeOxDB360	<chem>O=C(CCC1=CC=CC=C1)CN1C=NC(=N1)N(=O)=O</chem>	4
- HemeOxDB128	<chem>C1C=C(C1)C=C(C=C1)C1(CN2C=CN=C2)OCCO1</chem>	5.097
- HemeOxDB144	<chem>BrC1=CC=C(C=C=C1)C1(CN2C=CN=C2)OCCO1</chem>	4.921
- HemeOxDB54	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@H](COC3=CC=C(C=C3)C3=CC=CC=C3)O2)C=C1</chem>	5.699
- HemeOxDB253	<chem>CC1=NC=CN1</chem>	4
- HemeOxDB265	<chem>CC1=CC=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1</chem>	4
- HemeOxDB335	<chem>COC(=O)NC1=NC2=CC(=CC=C2N1)C(=O)C1=CC=CS1</chem>	4
- HemeOxDB87	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@H](CSC#N)O2)C=C1</chem>	5.523
- HemeOxDB347	<chem>CSC1=NC=CN1CCC(=O)CCC1=CC=CC=C1</chem>	4
- HemeOxDB183	<chem>C1C1=CC=C(C=C1)C(=O)CCN1C=CN=C1</chem>	4.495
- HemeOxDB117	<chem>NC1=CC=CC(SC[C@H]2CO[C@](CCC3=CC=C(C)C=C3)(CN3C=CN=C3)O2)=C1</chem>	5.284
- HemeOxDB191	<chem>COC1=CC=C(C=C1)C(=O)CN1C=CN=C1</chem>	4.409
- HemeOxDB208	<chem>OC(CCC1=CC=CC=C1)CN1C=NN=N1</chem>	4.252
- HemeOxDB298	<chem>BrC1=CC=C(C=C1)C(=O)CN=[N+]=[N-]</chem>	4
- HemeOxDB332	<chem>COC(=O)C1=CN(CC(=O)CCC2=CC=CC=C2)C=N1</chem>	4
- HemeOxDB376	<chem>OC(CCC1=CC=CC=C1)CN1N=CN=N1</chem>	4



Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
– HemeOxDB230	<chem>BrC1=CC=CC(OCCCCN2C=NC=N2)=C1</chem>	4
– HemeOxDB101	<chem>O=C(CN1C=CN=C1)C1=CC=C(CCC2=CC=CC=C2)C=C1</chem>	5.398
– HemeOxDB116	<chem>FC1=CC=C(COC(CN2C=CN=C2)C2=CC=C(C=C2)C2=CC=C(Br)C=C2)C=C1</chem>	5.301
– HemeOxDB290	<chem>CN1C=CN=C1</chem>	4
– HemeOxDB216	<chem>O=C(CN1C=CN=C1)C1=CC=C2OCCOC2=C1</chem>	4.137
– HemeOxDB51	<chem>BrC1=CC=C(CCC2(CN3C=CN=C3)OCCO2)C=C1</chem>	5.721
– HemeOxDB12	<chem>BrC1=CC=C(CCC(=O)CN2C=NC=N2)C=C1</chem>	6.409
– HemeOxDB4	<chem>OC(CCC1=CC=C(Br)C=C1)CN1C=CN=C1</chem>	6.854
– HemeOxDB279	<chem>N#CC1=CC=CC=C1CN1C(CN2CCCC2)=NC2=C1C=CC=C2</chem>	4
– HemeOxDB150	<chem>C1C1=CC=C(COC(CN2C=CN=C2)C2=CC=C(C1)C=C2)C=C1</chem>	4.796
– HemeOxDB345	<chem>CS(=O)(=O)C1=NN=NN1CCC(=O)CCC1=CC=CC=C1</chem>	4
– HemeOxDB297	<chem>[O-][N+](=O)C1=NC=CN1CC(=O)CCC1=CC=CC=C1</chem>	4
– HemeOxDB10	<chem>CC(=O)N1CCN(CC1)C1=CC=C(OC[C@@H]2CO[C@](CN3C=CN=C3)(O2)C2=CC=C(C1)C=C2)C=C1</chem>	6.523
– HemeOxDB75	<chem>O=C(CCN1C=NC=N1)CCC1=CC=CC=C1</chem>	5.602
– HemeOxDB147	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@@H](CSC3=CC4=C(C=CC=C4)C=C3)O2)C=C1</chem>	4.854
– HemeOxDB79	<chem>FC1=CC=C(CCC(=O)CN2C=CN=C2)C=C1</chem>	5.569
– HemeOxDB33	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@@H](CSC3=CC=CC=C3)O2)C=C1</chem>	5.987
– HemeOxDB328	<chem>C1C1=CC=C(C=C1)C(=O)N1C=NN=C1</chem>	4
– HemeOxDB359	<chem>O=C(CCC1=CC=CC=C1)CN1C=NC(=C1)N(=O)=O</chem>	4
– HemeOxDB114	<chem>O=C(CN1C=CN=C1)C1=CC=C(C=C1)C1CCCC1</chem>	5.301
– HemeOxDB342	<chem>CS(=O)(=O)C1=NC=NN1CCC(=O)CCC1=CC=CC=C1</chem>	4
– HemeOxDB73	<chem>O=C(CN1C=CN=C1)C1=CC=C(C=C1)N(=O)=O</chem>	5.602
– HemeOxDB367	<chem>O=C(CCC1=CC=CC=C1)CN1N=NC(=N1)C1=CC=CC=C1</chem>	4
– HemeOxDB19	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@@H](COC3=CC=C(C=C3)C#N)O2)C=C1</chem>	6.174
– HemeOxDB302	<chem>BrC1=CN=CN1CCC(=O)CCC1=CC=CC=C1</chem>	4
– HemeOxDB63	<chem>FC1=CC=C(C=C1)C(=O)CN1C=CN=C1</chem>	5.678
– HemeOxDB123	<chem>CC1=CC=C(C=C1)S(=O)(=O)OC[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1</chem>	5.222
– HemeOxDB141	<chem>OC[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1</chem>	4.921
– HemeOxDB277	<chem>C1=C(C1)C=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1</chem>	4
– HemeOxDB229	<chem>CC(=O)NCCC1=CNC=N1</chem>	4
– HemeOxDB102	<chem>NC1=CC=CC(SC[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)=C1</chem>	5.398
– HemeOxDB264	<chem>C(N1CCCC1)C1=NC2=C(C=CC=C2)N1CC1=CC2=C(C=CC=C2)C=C1</chem>	4
– HemeOxDB237	<chem>CN(C)CCC(=O)C1=CC=C(C1)C=C1</chem>	4
– HemeOxDB354	<chem>FC1=CC=C(C=C1)C1=CC=NO1</chem>	4
– HemeOxDB159	<chem>C1C1=CC(C=O)CN2C=NC=N2=C(C1)C=C1</chem>	4.735
– HemeOxDB256	<chem>C(N1CCCC1)C1=NC2=C(N1)C=CC=C2</chem>	4
– HemeOxDB241	<chem>CC(C)C1=NC=CN1CC(=O)C1=CC=C(Br)C=C1</chem>	4
– HemeOxDB368	<chem>O=C(CCC1=CC=CC=C1)CN1N=NC2=C1C=CC=C2</chem>	4
– HemeOxDB333	<chem>COC(=O)C1=NC=NN1CC(=O)CCC1=CC=CC=C1</chem>	4
– HemeOxDB146	<chem>C(CN1C=CN=C1)CC1=CC=CC=C1</chem>	4.854
– HemeOxDB78	<chem>C(N1C=CN=C1)C1(OCCO1)C1=CC2=CC=CC=C2C=C1</chem>	5.58
– HemeOxDB57	<chem>BrC1=CC=CC(=C1)C(=O)CN1C=CN=C1</chem>	5.686
– HemeOxDB312	<chem>C1CC(CCN1)NC1=NC2=C(N1)C=CC=C2</chem>	4
– HemeOxDB32	<chem>[H]C1=CC2=C(SC(SCCCCN3C=CN=C3)=N2)C=C1</chem>	6
– HemeOxDB324	<chem>CCOC(=O)N1CCC(CC1)NC1=NC2=C(C=CC=C2)N1CC1=CC=C(F)C=C1</chem>	4
– HemeOxDB193	<chem>[H]C1=CC2=C(SC(SCCCCN3C=CN=C3)=N2)C=C1</chem>	4.4
– HemeOxDB103	<chem>C(CCN1C=CN=C1)COC1=CC=CC=C1</chem>	5.398
– HemeOxDB291	<chem>COC1=C2C(=O)[C@]3(OC2=C(C1)C(OC)=C1)[C@H](C)CC(=O)C=C3OC</chem>	4
– HemeOxDB283	<chem>C1C1=CC=CC(C1)=C1CN1C(CN2CCCC2)=NC2=C1C=CC=C2</chem>	4
– HemeOxDB222	<chem>O=C(CCC1=CC=CC=C1)CN1C=CN=N1</chem>	4.051
– HemeOxDB110	<chem>C1C1=CC=C(CCC2(CN3C=CN=C3)SCCS2)C=C1</chem>	5.328
– HemeOxDB355	<chem>NC1=NC2=C(N1)C=CC(OCCCN1CCCC1)=C2</chem>	4
– HemeOxDB288	<chem>NC1=C(C=CC(C1)=C1)C1=NN=NN1</chem>	4
– HemeOxDB28	<chem>C1C1=CC=C(CC[C@]2(CN3C=CN=C3)OC[C@@H](CSC3=CC4=C(C=CC=C4)C=C3)O2)C=C1</chem>	6.046
– HemeOxDB7	<chem>BrC1=CC=C(CCCCN2C=CN=C2)C=C1</chem>	6.602
– HemeOxDB329	<chem>C1C1=CC=C(OCCCCNC2=NC3=CC=CC=C3N2)C=C1</chem>	4

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
- HemeOxDB129	C1C=CC=C(C=C1)C(/CN1C=CN=C1)=N/OCC1=CC=C(Br)C=C1	5.081
- HemeOxDB160	O=S(CCCCN1C=CN=C1)C1=CC=CC=C1	4.734
- HemeOxDB27	[H]C1=CC2=C(C(=O)SC(CCCN3C=CN=C3)=N2)C=C1	6.046
- HemeOxDB5	OC(CN1C=CN=C1)C1=CC=C(CCC2=CC=CC=C2)C=C1	6.648
- HemeOxDB225	CCCCO1=CC=C2NC(NC(=O)OC)=NC2=C1	4
# HemeOxDB142	O=C(CN1C=CN=C1)NCC1=CC=CC=C1	4.921
# HemeOxDB66	O=C(CN1C=CN=C1)C1=CC=CC2=CC=CC=C12	5.658
# HemeOxDB96	IC1=CC=C(CCC2(CN3C=CN=C3)OCCO2)C=C1	5.432
# HemeOxDB167	CC1=CC=C(C=C1)S(=O)(=O)OC[C@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(C2C=CN=C2)O1	4.678
# HemeOxDB39	COC1=CC=C(OC[C@@H]2CO[C@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	5.876
# HemeOxDB89	C1C=CC=C(C=C1)C(CN1C=CN=C1)NCC1=CC=CC=C1	5.47
# HemeOxDB252	COC1=CC=CC(=C1)C1=NN=NN1	4
# HemeOxDB151	C(N1C=CN=C1)C1(OCCO1)C1=CC=C(C=C1)C1=CC=CC=C1	4.79
# HemeOxDB71	C(CSC1=CC=CC=C1)CN1C=CN=C1	5.62
# HemeOxDB84	C(CCN1C=CN=C1)CCC1=CC=CC=C1	5.553
# HemeOxDB6	O=C(CN1C=NC=N1)C1=CC2=C(CCCC2)C=C1	6.62
# HemeOxDB226	C1C=CC=C(C[C@H]2(CN3C=CN=C3)OC[C@H](COC3=CC=C(C=C3)C34CC5CC(C(C5)C3)C4)O2)C=C1	4
# HemeOxDB40	OC(CCC1=CC=C(F)C=C1)CN1C=CN=C1	5.854
# HemeOxDB109	O=C(CN1C=CN=C1)C1=CC2=C(CCC2)C=C1	5.337
# HemeOxDB299	BrC1=CC=C(CCC(=O)CN2C=NC3=CC=CC=C23)C=C1	4
# HemeOxDB249	C(OC1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1)C1=CC=CC=C1	4
# HemeOxDB350	CSC1=NN(CC(=O)CCC2=CC=CC=C2)N=N1	4
# HemeOxDB149	OC(CCC1=CC=CC=C1)CN1C=NC(=C1)C1=CC=CC=C1	4.824
# HemeOxDB104	BrC1=CC(=CC=C1)C1(CN2C=CN=C2)OCCO1	5.398
# HemeOxDB246	[O-][N+](=O)C1=CC=C(OC(CCN2C=NC=N2)C=C1	4
# HemeOxDB326	C1C=C(C1)N(CC(=O)CCC2=CC=CC=C2)C=N1	4
# HemeOxDB356	O=C(C1CC1)C1=CC=C(C=C1)N1C=CN=C1	4
# HemeOxDB325	CCOC(=O)N1CCC(CC1)NC1=NC2=C(N1)C=CC=C2	4
# HemeOxDB217	IC1=CC=C(OC(CCN2C=NC=N2)C=C1	4.125
# HemeOxDB53	O=C(CN1C=CN=C1)C1=CC=C(C(C2=CC=CC=C2)C=C1	5.701
# HemeOxDB276	C1C=C(C1)C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=CC=C1	4
# HemeOxDB29	FC1=CC=C(COC(CCC2=CC=C(C1)C=C2)CN2C=CN=C2)C=C1	6.046
# HemeOxDB136	BrC1=CC=C(OC(CCCCN2C=CN=C2)C=C1	5
# HemeOxDB313	CC(=O)C(CC1=CC=C(C1)C=C1)N1C=CN=C1	4
# HemeOxDB25	O=C(CN1C=NC=N1)C1=CC=CC2=CC=CC=C12	6.102
# HemeOxDB243	CCC(COC(C)=O)N1C=CN=C1	4
# HemeOxDB184	O=C(CCC1=CC=CC=C1)CN1C=NC(=C1)C1=CC=CC=C1	4.495
# HemeOxDB318	CC1=NC=CN1CC(=O)CCC1=CC=CC=C1	4
# HemeOxDB322	CCOC(=O)CC1=NN(CC(=O)CCC2=CC=CC=C2)N=N1	4
# HemeOxDB145	C(CC1(CN2C=NC=N2)OCCO1)C1=CC=CC=C1	4.886
# HemeOxDB346	CSC1=NC=CN1CC(=O)CCC1=CC=CC=C1	4
# HemeOxDB319	CCCC(=O)N1C=CN=C1	4
# HemeOxDB244	C(COC1=CC=CC=C1)CN1C=NC=N1	4
# HemeOxDB74	NC1=C(SC[C@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=CC=C1	5.602
# HemeOxDB153	[H]C1=CC2=C(C(=O)SC(CCCN3C=CN=C3)=N2)C=C1	4.772
# HemeOxDB108	C1C=CC(C1)=C(C=C1)C(=O)CN1C=NC=N1	5.387
# HemeOxDB236	C(N1CCCC1)C1=NC2=C(C=C=CC=C2)N1CC1=CC=CC=C1	4
# HemeOxDB85	O=C(CN1C=CN=C1)C12CC3CC(C(C3)C1)C2	5.523
# HemeOxDB36	C(CCN1C=CN=C1)CSC1=CC=CC=C1	5.921
# HemeOxDB105	C(CN1C=CN=C1)SCC1=CC=CC=C1	5.398
# HemeOxDB211	C1C=CC=C(C=C1)C1(CN2C=NC=N2)OCCO1	4.163
# HemeOxDB70	COC1=CC=C(CCC(=O)CN2C=CN=C2)C=C1	5.658
# HemeOxDB370	O=C(CCN1C=CC=N1)CCC1=CC=CC=C1	4
# HemeOxDB202	IC1=CC=C(OC(CCCN2C=CN=C2)C=C1	4.357
# HemeOxDB181	C(N1C=CN=C1)C1(OCCO1)C1=CC=CC=C1	4.509
# HemeOxDB139	O=C(CN1C=CN=C1)C1=CC=C(OC(C2=CC=CC=C2)C=C1	4.959
# HemeOxDB314	CC(=O)C(CC1=CC=CC=C1)N1C=NC=N1	4
# HemeOxDB323	CCOC(=O)CC1=NN=NN1CC(=O)CCC1=CC=CC=C1	4

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
# HemeOxDB135	OC(CN1C=CN=C1)C1=CC=C(C=C1)N(=O)=O	5
# HemeOxDB126	C1C1=CC=C(C1)C(=C1)C(=O)CN1C=CN=C1	5.18
# HemeOxDB235	CCCSC1=CC2=C(NC(NC(=O)OC)=N2)C=C1	4
# HemeOxDB24	O=C(CN1C=NC=N1)C1=CC=C(C=C1)C1=CC=CC=C1	6.131
# HemeOxDB18	C[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	6.222
# HemeOxDB82	C1C1=CC=C(CCC2(CN3C=CN=C3)OCCO2)C=C1	5.553
# HemeOxDB292	COC1=CC=C(CCN2CCC(C)NC2=NC3=CC=CC=C3N2CC2=CC=CC=C2)C=C1	4
* HemeOxDB348	CSC1=NC=NN1CC(=O)CCC1=CC=CC=C1	4
* HemeOxDB287	COC(=O)NC1=NC2=C(N1)C=CC(SC1=CC=CC=C1)=C2	4
* HemeOxDB271	CC1=CC=C(C(N2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
* HemeOxDB118	C1C1=CC=C(C(CN2C=CN=C2)OCC2=C(C1)C=CC=C2)C(C1)=C1	5.252
* HemeOxDB98	FC1=CC=C(CCC2(CN3C=CN=C3)OCCO2)C=C1	5.42
* HemeOxDB266	N#CC1=CC=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=C1	4
* HemeOxDB106	IC1=CC=C(C=C1)C(=O)CN1C=CN=C1	5.398
* HemeOxDB121	C1C1=CC=C(C[C@@H]2(CN3C=CN=C3)OC[C@@H](CSC3=CC=C(C=C3)N(=O)=O)O2)C=C1	5.222
* HemeOxDB115	NC1=CC=CC=C1SC[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	5.301
* HemeOxDB296	CCCCN1C=CN=C1	4
* HemeOxDB170	O=C(CCN1C=CN=C1)/C=C/C1=CC=CC=C1	4.638
* HemeOxDB371	O=C(CN1C=CN=C1)C1=CC=CS1	4
* HemeOxDB111	C1C1=CC=C(CCC(=O)N2C=CN=C2)C=C1	5.328
* HemeOxDB45	O=C(CCCC1=CC=CC=C1)CN1C=CN=C1	5.824
* HemeOxDB168	NC[C@@H]1CO[C@@](CCC2=CC=CC=C2)(CN2C=CN=C2)O1	4.678
* HemeOxDB192	C(CC1(CN2C=NN=N2)OCCO1)C1=CC=CC=C1	4.409
* HemeOxDB93	O=C(CCN1C=CN=C1)C1C2CC3CC(C1)C1)C2	5.456
* HemeOxDB188	IC1=CC=C(OCCCN2C=NC=N2)C=C1	4.42
* HemeOxDB224	C1C1=CC=C(C1)C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=C1	4.018
* HemeOxDB215	C(CC1(CN2N=CN=N2)OCCO1)C1=CC=CC=C1	4.143
* HemeOxDB231	C1C1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
* HemeOxDB171	O=C(C(N1C=CN=C1)C1=CC=CC=C1)C1=CC=CC=C1	4.62
* HemeOxDB334	COC(=O)C1=NN(CC(=O)CCC2=CC=CC=C2)C=N1	4
* HemeOxDB307	C(CC1(CN2C=NC(=C2)C=CC=C2)C2=CC=CC=C2)OCCO1)C1=CC=CC=C1	4
* HemeOxDB182	C(CN1C=CN=C1)OCC1=CC=CC=C1	4.495
* HemeOxDB124	C(CN1C=CN=C1)SC1=CC=CC=C1	5.222
* HemeOxDB140	O=C(CN1C=NC=N1)C1=CC=CC=C1	4.924
* HemeOxDB343	CS(=O)(=O)C1=NN(CC(=O)CCC2=CC=CC=C2)C=N1	4
* HemeOxDB221	NC1=C(S[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=CC=C1	4.06
* HemeOxDB316	CC(C)(N1C=CN=C1)C(=O)C1=CC=CC=C1	4
* HemeOxDB374	O=C1C(CC2=CC=CC=C12)N1C=CN=C1	4
* HemeOxDB240	NCC(=O)C1=CC=C(Br)C=C1	4
* HemeOxDB269	C1C1=CC=CC(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)=C1	4
* HemeOxDB209	C(CN1C=CN=C1)OC1=CC=CC=C1	4.215
* HemeOxDB52	O=C(CN1C=CN=C1)C1=CC=C2C=CC=CC2=C1	5.721
* HemeOxDB48	COC[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	5.762
* HemeOxDB218	CC1=CC=CC=C1CN1C(CN2CCCC2)=NC2=C1C=CC=C2	4.119
* HemeOxDB22	COC1=CC=C(S[C@@H]2CO[C@@](CCC3=CC=C(C1)C=C3)(CN3C=CN=C3)O2)C=C1	6.155
* HemeOxDB262	FC1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
* HemeOxDB2	OC(CN1C=CN=C1)C1=CC=C(C=C1)C1=CC=C(Br)C=C1	7.222
* HemeOxDB3	IC1=CC=C(CCC(=O)N2C=CN=C2)C=C1	6.959
* HemeOxDB8	O=C(CC(C1=CC=CC=C1)C1=CC=CC=C1)CN1C=CN=C1	6.569
* HemeOxDB94	C(N1C=NC=N1)C1(OCCO1)C1=CC2=CC=CC=C2C=C1	5.446
* HemeOxDB47	BrC1=CC=C(CCC(=O)N2C=CN=C2)C=C1	5.77
* HemeOxDB166	NC[C@@H]1CO[C@@](CCC2=CC=C(C1)C=C2)(CN2C=CN=C2)O1	4.678
* HemeOxDB263	C(CC1=CC=CC=C1)N1C(CN2CCCC2)=NC2=C1C=CC=C2	4
* HemeOxDB152	O=C1SC2=C(C=CC=C2)N1CCCN1C=CN=C1	4.78
* HemeOxDB301	BrC1=CN(CC(=O)CCC2=CC=CC=C2)C=N1	4
* HemeOxDB285	N1C=NC2=CC=CC=C12	4
* HemeOxDB309	C(CC1=CC=CS1)N1C=CN=C1	4
* HemeOxDB315	CC(=O)CCC1=CC=C(Br)C=C1	4
* HemeOxDB30	C1C1=CC=C(C[C@@H]2(CN3C=CN=C3)OC[C@@H](CSC3CCCCC3)O2)C=C1	6.027

Table 4 (continued)

HemeOxDB_ID	SMILES	Exp pIC <sub>50</sub>
* HemeOxDB200	BrC1=CC=CC(OCCCCCN2C=CN=C2)=C1	4.371
* HemeOxDB15	OC(CCC1=CC=C(Cl)C=C1)CN1C=CN=C1	6.301
* HemeOxDB176	O=C(CCN1C=CN=C1)CCC1=CC=CC=C1	4.553
* HemeOxDB344	CS(=O)(=O)C1=NN(CCC(=O)CCC2=CC=CC=C2)N=N1	4
* HemeOxDB207	COC(=O)C1=CN=CN1CC(=O)CCC1=CC=CC=C1	4.26
* HemeOxDB255	OC(=O)CN1C=CN=C1	4
* HemeOxDB260	CC(C)C1=CC=C(CN2C(CN3CCCC3)=NC3=C2C=CC=C3)C=C1	4
* HemeOxDB179	C(COC1=CC=CC=C1)CN1C=CN=C1	4.509

Table 5

List of SMILES and predicted pIC<sub>50</sub> of the FDA-approved drugs.

	Calc pIC <sub>50</sub>
CCC1=C(C)CN(C(=O)NCCC2=CC=C(C=C2)S(=O)(=O)NC(=O)NC2CCC(C)CC2)C1=O	7.657
COCCOC[C@H](CC1(CCCCC1)C(=O)N[C@H]1C[C@H](CC1)C(O)=O)C(=O)OC1=CC2=C(C(CCC2)C=C1)	7.3445
CC(C)C1CC[C@H](CC1)C(=O)N[C@H](CC1=CC=CC=C1)C(O)=O	6.7911
OC(=O)C(CC(=O)N1CC2CCCC2C1)CC1=CC=CC=C1	6.7525
CN(C)C1=NC(=NC(=N1)N(C)N(C)C)	6.7024
CC1=CC=C(C=C1)S(=O)(=O)NC(=O)NN1CC2CCCC2C1	6.5387
COC1=C(C=C(Cl)C=C1)C(=O)NCCC1=CC=C(C=C1)S(=O)(=O)NC(=O)NC1CCCC1	6.28
COC1=C(CC2=CN(C)C3=C2C=C(NC(=O)OC2CCCC2)C=C3)C=CC(=C1)C(=O)NS(=O)(=O)C1=CC=CC=C1C	6.2556
CCCN(CCC)CCC1=C2CC(=O)NC2=CC=C1	6.061
CC(C)NCC(O)COC1=CC=C(C(COCC2CC2)C=C1)	5.948
CCCCCCCCCCCCCCCCCCCCO	5.9243
O=C1CC2(CCCC2)CC(=O)N1CCCCN1CCN(CC1)C1=NC=CC=N1	5.8772
CCOC1=CC(N)=C(C=C1)C(=O)NC1CCN(CC2CCC=CC2)CC1][N+][O-]=O	5.8503
FC1=CC=C(C=C1)C(CCCN1CCC(CC1)N1C(=O)NC2=CC=CC=C12)C1=CC=C(F)C=C1	5.8017
COC1=CC(CC2=CN=C(N)N=C2N)=CC(OC)=C1OC	5.701
COC1=CC(NCC2=C(C)C3=C(C=C2)N=C(N)N=C3N)=CC(OC)=C1OC	5.6809
CCN(CCCC1=CC=CC=C1)CCCC1=CC=CC=C1	5.6401
NC(=N)C1=CC=C(OCCCCOC2=CC=C(C=C2)C(N)=N)C=C1	5.6056
CCC1(CCC(C)C)C(=O)NC(=O)NC1=O	5.4584
CN(C)CCC1=CN2=C1C=C(CN1C=NC=N1)C=C2	5.4311
CC(C)CC1=CC=C(C=C1)C(C)C(O)=O	5.4135
CC(C)CC(N(C)C)C1(CCC1)C1=CC=C(Cl)C=C1	5.3913
CC(C)C(C(=O)O)COP(=O)(COCN1C=NC2=C(N)N=CN=C12)OCOC(=O)C(C)C(C)	5.3834
CC(C)[C@H](N)C(=O)OCCOCN1C=NC2=C1NC(N)=NC2=O	5.3733
CN1N=C(C(=O)NC2CC3CCCC(C2)N3)C2=CC=CC=C12	5.3389
CN1[C@H]2CC[C@H]1C[C@H](C2)OC(=O)C(CO)C1=CC=CC=C1	5.3217
CC(C)COCC(CN(CC1=CC=CC=C1)C1=CC=CC=C1)N1CCCC1	5.2783
CCN1N=NN(CCN2CCC(COC)(CC2)N(C(=O)CC)C2=CC=CC=C2)C1=O	5.2659
CC(C)NCC(O)COC1=CC=C(COCCOC(C)C)C=C1	5.2609
CN1[C@H]2CC[C@H]1C[C@H](C2)OC(=O)[C@H](CO)C1=CC=CC=C1	5.2472
OC1=C(C=C(Cl)C=C1)C(=O)NC1=C(Cl)C=C(C=C1)[N+][O-]=O	5.2426
CCCCNC(=O)NS(=O)(=O)C1=CC=C(C)C=C1	5.167
C1C1=CC(Cl)=C(COC(CN2C=CN=C2)C2=C(Cl)C=C(Cl)C=C2)C=C1	5.1454
CC1=CC=C(C=C1)C(=O)C1=CC=C(O)C(O)=C1][N+][O-]=O	5.092
COC1=CC2=NNN=C2C=C1C(=O)NCC1CCCN1CC=C	5.0598
CCCCCCN(C)CCC(O)C1=CC=C(NS(C)(=O)=O)C=C1	5.0534
CCCNCC(O)COC1=CC=CC=C1C(=O)CCC1=CC=CC=C1	4.9973
N[C@H](CC1=CN=CN1)C(O)=O	4.9548
CN(CC1=CC=C(C=C1)C(C)C)CC1=CC=CC2=CC=CC=C12	4.9507
COCCC1=CC=C(OCC(O)CNC(C)C)C=C1	4.9426
CCC1=NN(CCN2CCN(CC2)C2=CC(Cl)=CC=C2)C(=O)N1CCOC1=CC=CC=C1	4.9373
CCCCC1(C)C(=O)NC(=O)NC1=O	4.9305
CCCN(CCC1=CC=CC=C1)C1CC2=C(C1)C=CC=C2O	4.9178

Table 5 (continued)

	Calc pIC <sub>50</sub>
CC(=O)OCC(CCN1C=NC2=CN=C(N)N=C12)COC(C)=O	4.9138
CO[C@H]1CN(CCCOC2=CC=C(F)C=C2)CC[C@H]1NC(=O)C1=CC(CI)=C(N)C=C1OC	4.9129
NC(=N)N1CCC2=CC=CC=C2C1	4.8682
ClC1=CC=C(COC(CN2C=CN=C2)C2=C(Cl)C=C(Cl)C=C2)C=C1	4.8625
CC1=CN=C(C=N1)C(=O)NCCC1=CC=C(C=C1)S(=O)(=O)NC(=O)N1CCCC1	4.861
N[C@@H](CC1=CC=CC=C1)C(O)=O	4.8219
CN(CC=CC1=CC=CC=C1)CC1=CC=CC2=CC=CC=C12	4.8123
COC1=CC(C(O)C(N)=C(OC)C=C1	4.7948
COC1=C(OC)C=C2C(N)=NC(=NC2=C1)N(C)CCNC(=O)C1CCCO1	4.7908
CC(C)CC1(CC=C)C(=O)NC(=O)NC1=O	4.7818
FC1=CC=C(C=C1)C(=O)CCCN1CCC(=CC1)N1C(=O)NC2=CC=CC=C12	4.7367
COC1=CC=C(C=C1)C(=O)NC1=CC=CC=C1CCC1CCCN1C	4.7264
O=C1CCC2=C(N1)C=CC(OC(CCC1=NN=NN1C1CCCC1)=C2	4.7135
CN1CCC[C@H]1CCO[C@](C)(C1=CC=CC=C1)C1=CC=C(Cl)C=C1	4.7082
C(C1CCCC1)C1CCCC1C1CCCN1	4.6999
CC1=CC(=O)N(O)C(=C1)C1CCCC1	4.6909
CCCC(=O)O[C@H](COC(=O)CC)OP(O)(=O)OC[C@H](N)C(O)=O	4.671
CC1=CC=C(C=C1)S(=O)(=O)NC(=O)NN1CCCC1	4.6597
COC1=CC2=C(C=CC=C2CCNC(C)=O)C=C1	4.6382
CC(C)NCC(O)C1=CC(O)=C(O)C=C1	4.6327
ClC1=C(COC(CN2C=CN=C2)C2=C(Cl)C=C(Cl)C=C2)C=CS1	4.6304
CC1=C(C)N=C(NS(=O)(=O)C2=CC=C(N)C=C2)O1	4.6169
CC(C=CC1=C(C)CCCC1(C)C)=CC=CC(C)=CC(O)=O	4.6135
COC1=CC2=C(NC=C2CCNC(C)=O)C=C1	4.5993
CC[C@H](N1CCCC1=O)C(N)=O	4.5956
CC(C)NCC(O)COC1=CC=CC=C1CC=C	4.5892
COC1=C(OC)C=C2C(N)=NC(=NC2=C1)N1CCN(CC1)C(=O)C1CCCO1	4.5855
CCCN(CCC)S(=O)(=O)C1=CC=C(C=C1)C(O)=O	4.5747
N[C@@H](CC1=CNC2=CC=CC=C12)C(O)=O	4.5676
COC1=C(OC)C=C2C(N)=NC(=NC2=C1)N1CCN(CC1)C(=O)C1=CC=CCO1	4.5607
COC(=O)CCC1=CC=C(OC(C)CNC(C)C)C=C1	4.559
CC(C)NCC(O)COC1=CC=CC2=CC=CC=C12	4.5575
NC1=CC=C(C=C1)S(=O)(=O)NC1=CC=NN1C1=CC=CC=C1	4.5554
CCCC(C)C1(CC=C)C(=O)NC(=O)NC1=O	4.5553
CCN(CC)CCN(C1CC2=CC=CC=C2C1)C1=CC=CC=C1	4.5518
N[C@@H](CCC(O)=O)C(O)=O	4.5412
O=C(NC1=CC2=C(C=C1)C(=O)C=C(O2)C1=NNN=N1)C1=CC=C(OC(CCC2=CC=CC=C2)C=C1	4.5399
COC1=CC2=C(C=C1)C=C(C(C(C)O)C=C2	4.5388
CCC1=CN=C(COC2=CC=C(CCC3C(=O)NC3=O)C=C2)C=C1	4.5281
CCC(=C(C)C)C1=CC=C(O)C=C1)C1=CC=C(O)C=C1	4.5246
CC(C)[C@H]1CC[C@H](C)C[C@H]1O	4.5244
CC(C)NCC1=CC=CC=C1	4.519
CN1CCCC(C2C3=CC=CC=C3SC3=CC=CC=C23)C1	4.5063
C(C1=NCCN1)C1=CC=CC2=CC=CC=C12	4.5059
COC(=O)NC1=NC2=C(N1)C=C(C=C2)C(=O)C1=CC=CC=C1	4.4965
CCN(CC)CCNC(=O)C1=CC(CI)=C(N)C=C1OC	4.4815
CC(N)CC1=CC=CC=C1	4.4686
CC(CCC1=CC=CC=C1)NCC(O)C1=CC(C(N)=O)=C(O)C=C1	4.46
COC1=NC=CN=C1NS(=O)(=O)C1=CC=C(N)C=C1	4.4456
CCC(=O)N(C1=CC=CC=C1)C1(CCN(CCC(=O)OC)CC1)C(=O)OC	4.438
CC(C)N(C[C@H](C1=CC=CC=C1)C1=C(O)C=CC(C)=C1)C(C)C	4.4327
C[C@H](C1=CN=C(N1)C1=C(C)C(C)=CC=C1	4.4282
CC(C)NCC(O)C1=CC(CI)=C(N)C(CI)=C1	4.4149
CCN1C(=O)NC(C1=O)C1=CC=CC=C1	4.411
CCOC(=O)C1(CCN(CCC2=CC=C(N)C=C2)CC1)C1=CC=CC=C1	4.3966
CC(=O)C1=CC=C(C=C1)S(=O)(=O)NC(=O)N1CCCC1	4.395
CC(C)NCC(O)COC1=CC=CC2=C1C=CN2	4.3921
O=C(CCCC1=CC=CC=C1)OCC(COC(=O)CCCC1=CC=CC=C1)OC(=O)CCCC1=CC=CC=C1	4.3813
COC1=CC=C(C=C1)C(CI)=C(C1=CC=C(OC)C=C1)C1=CC=C(OC)C=C1	4.3799
OC(=O)CCC1=NC(=C(O)C1=CC=CC=C1)C1=CC=CC=C1	4.3619
ClC(Cl)C(C1=CC=C(Cl)C=C1)C1=CC=CC=C1C1	4.3605

Table 5 (continued)

	Calc pIC <sub>50</sub>
CC1=C(OC2=C(C=CC=C2C(=O)O)CCN2CCCC2)C1=O)C1=CC=CC=C1	4.3556
CC(C)NCC(O)COC1=CC=CC=C1OCC=C	4.3528
CCCCOC1=C(N)C=CC(=C1)C(=O)OCCN(CC)CC	4.3329
CC(C)NCC(O)COC1=CC=C(NC(C)=O)C=C1	4.3306
CCC(NC(C)C)C(O)C1=CC(O)=C(O)C=C1	4.3301
C[C@H](CN1C=NC2=C1N=CN=C2N)OCP(O)(O)=O	4.2933
CN[C@H]1CC[C@@H](C2=CC(Cl)=C(Cl)C=C2)C2=CC=CC=C12	4.2886
CC(=O)NS(=O)(=O)C1=CC=C(N)C=C1	4.2868
COC[C@@H](NC(C)=O)C(=O)NCC1=CC=CC=C1	4.2712
CCCC(CCC)C(O)=O	4.2703
N[C@@H](CSSC[C@H](N)C(O)=O)C(O)=O	4.2604
CC=C(C(=CC)C1=CC=C(O)C=C1)C1=CC=C(O)C=C1	4.2578
CN(C)CCC(C1=CC=C(Cl)C=C1)C1=CC=CC=N1	4.2572
CN1C(=O)CC(C1=O)C1=CC=CC=C1	4.2564
CC1(C)C(=O)NC(=O)N(C)C1=O	4.2557
CC(COC1=CC=CC=C1)N(CCC1)CC1=CC=CC=C1	4.2525
C1=CN(C=N1)C(C1=CC=CC=C1)C1=CC=C(C=C1)C1=CC=CC=C1	4.2453
CCC(C)C1(CC=C)C(=O)NC(=O)NC1=O	4.2429
CNC(C)CCC=C(C)C	4.2383
CC[C@H]1[C@@H](CC2=CN=CN2)COC1=O	4.232
CCOC(=O)N1C=CN(C)C1=O	4.2193
CCCC(C)C1(CC)C(=O)NC(=O)NC1=O	4.2154
CCCS1=CC2=C(C=C1)N=C(NC(=O)O)N2	4.2147
OC(=O)CCCC1=CC=C(C=C1)N(CCC1)CC1	4.1857
CN(C)CCC(C1=CC=CC=C1)C1=CC=CC=N1	4.1779
FC1=CC=C(C=C1)N1C=C(C2CCN(CCN3CCNC3=O)CC2)C2=C1C=CC(Cl)=C2	4.1777
NC1=C2CCCC2=NC2=CC=CC=C12	4.1688
CC(C)NCC(O)C1=CC(O)=CC(O)=C1	4.1666
CC(=O)OCC(=O)NCCOC1=CC=CC(CN2CCCC2)=C1	4.1621
CCCCCCCCCCCCO	4.1454
CCCCOC1=NC2=CC=CC=C2C(=C1)C(=O)NCCN(CC)CC	4.1434
CCN(CC)CCOC1=CC=C(C=C1)C(=C(Cl)C1=CC=CC=C1)C1=CC=CC=C1	4.1393
COCCOC1=CN=C(NS(=O)(=O)C2=CC=CC=C2)N=C1	4.129
CC1=CC(=CC(C)=C1CC1=NCCN1)C(C)C	4.128
CN(CCOC1=CC=C(CC2S(=O)NC2=O)C=C1)C1=CC=CC=N1	4.1273
CN1CCC(CC1)OC(C1=CC=CC=C1)C1=CC=CC=C1	4.1235
CCN(CC)CCOC(=O)C1=C(Cl)C=C(N)C=C1	4.1159
CCCC1=NC(Cl)=C(O)N1CC1=CC=C(C=C1)C1=CC=CC=C1C1=NNN=N1	4.1151
O=C1N=CN=C2NNC=C12	4.1095
COC1=CC2=C(C=C1)C=C(C=C2)[C@H](C)C(O)=O	4.1047
CC1=CC2=C(N1)C=CC=C2OCC(CNC(C)C)OC(=O)C1=CC=CC=C1	4.0987
N1C2=CC=CC=C2N=C1C1=CSC=N1	4.0878
COC1=C(OC)C=C2C3CC(=O)C(CC(C)C)CN3CCC2=C1	4.0859
NC1=C2NC=NC2=NC=N1	4.0841
CCC(C)C1(CC)C(=O)NC(=O)NC1=O	4.0792
[O-][N+](=O)C1=CC=C(C=C1)C1=CC=C(O1)C=NN1CC(=O)NC1=O	4.0755
CN1C2=C(C=C(Cl)C=C2)C(=NC(O)C1=O)C1=CC=CC=C1	4.0695
COC1=C(OC)C=C(CCNCC(O)COC2=CC=CC(C)=C2)C=C1	4.0662
CN(C(=O)C(Cl)C1)C1=CC=C(OC(=O)C2=CC=CO2)C=C1	4.0599
NC1=CC=C(C=C1)C(=O)NCC(O)=O	4.0555
CC(NC(C)C)C(=O)C1=CC(Cl)=CC=C1	4.055
CN[C@@H](C)CC1=CC=CC=C1	4.0441
COC1=C(OC)C=C(C2=NC=CC3=CC(OC)=C(OC)C=C23)C=C1	4.0407
CCOC(=O)CCCCCCCC(C)C1=CC=CC=C11	4.0284
C[C@@H](CC1=CC=CC=C1)N(C)CC1=CC=CC=C1	4.0265
NC1=CC=C(C=C1)S(=O)(=O)NC1=NC=CC=N1	4.0196
CCC1(NC(=O)N(C)C1=O)C1=CC=CC=C1	4.0159
CC1=CN([C@@H]2O[C@H](CO)C=C2)C(=O)NC1=O	4.0115
NC1=CC(Cl)=C(NC2=NCCN2)C(Cl)=C1	3.9983
NC1=NC(N)=C2N=C(C(N)=NC2=N1)C1=CC=CC=C1	3.9959
OC(=O)C1=CC=CC=C1OC(=O)C1=CC=CC=C1O	3.9916

Table 5 (continued)

	Calc pIC <sub>50</sub>
C1C1=CC=CC(=C1)N1CCN(CCCN2N=C3C=CC=CN3C2=O)CC1	3.9883
C1C1=CC=C(S1)C(=O)NC[C@H]1CN(C(=O)O)C1=CC=C(C=C1)N1CCOCC1=O	3.9842
CC(CCC1=CC=C(O)C=C1)NCCC1=CC(O)=C(O)C=C1	3.9783
S=C1N=CNC2=C1NC=N2	3.9627
COC1=CC=C(CCN2CCC(CC2)NC2=NC3=CC=CC=C3N2CC2=CC=C(F)C=C2)C=C1	3.9599
CC(C)NCC(O)COC1=C(C)C(C)=C(OC(C)=O)C(C)=C1	3.9588
C(N(CC1=CC=CC=C1)C1=CC=CC=C1)C1=NCCN1	3.9578
NC1=NC(=S)C2=C(N1)N=CN2	3.9538
CC(C)C[C@H](N)C(O)=O	3.9532
CC(C)NC(=O)NS(=O)(=O)C1=C(NC2=CC=CC(C)=C2)C=CN=C1	3.9437
CN1C=NC2=C1C(=O)NC(=O)N2C	3.9378
OC(=O)CCCN1CCC(CC1)OC(C1=CC=C(Cl)C=C1)C1=CC=CC=N1	3.937
CN1C=NC2=C1C(=O)N(CCCC(C)=O)C(=O)N2C	3.9279
C[C@H](N)CC1=CC=CC=C1	3.9224
C(C=CC1=CC=CC=C1)N1CCN(CC1)C(C1=CC=CC=C1)C1=CC=CC=C1	3.9128
NC1=CC=C(C=C1)S(=O)(=O)NC1=CC=CC=N1	3.9055
C(C1=NCCN1)C1=CC=CC=C1	3.8771
CN1CCN(CC2=CC=C(C=C2)C(=O)NC2=CC(NC3=NC=CC(=N3)C3=CN=CC=C3)=C(C)C=C2)CC1	3.87
N[C@H]1CONC1=O	3.8665
CC1=CC=C(C=C1)N(CCN1)C1=CC(O)=CC=C1	3.8642
OC1=C(C2=C(C(O)C3=C(OC2=O)C=CC=C3)C(=O)OC2=C1C=CC=C2	3.8597
COC1=CC(O)=C(C=C1)C(=O)C1=CC=CC=C1	3.852
BrC1=C(NC2=NCCN2)C=CC2=NC=CN=C12	3.8374
CCN(CC)CCOC(=O)C1(CCCCC1)C1CCCC1	3.8337
CC(C)NCC(O)C1=CC=C(NS(C)(=O)=O)C=C1	3.8223
CC(C(O)=O)C1=CC=C(S1)C(=O)C1=CC=CC=C1	3.8159
CN1CCCC1C1=CN=CC=C1	3.8105
CCN(CC)CC1=C(O)C=CC(NC2=C3C=CC(Cl)=CC3=NC=C2)=C1	3.8102
CC(C)C(C1=CC=C(CN2CCN(CC2)C(C2=CC=CC=C2)C2=CC=C(Cl)C=C2)C=C1	3.8053
C1CN2C[C@H](N=C2S1)C1=CC=CC=C1	3.7974
CCCC1=NC2=C(C=C(C=C2)C2=NC3=CC=CC=C3N2C)N1CC1=CC=C(C=C1)C1=CC=CC=C1(C(O)=O	3.7869
CN(C)CCN(CC1=CC=CC=C1)C1=CC=CC=N1	3.7777
NC12CC3CC(CC(C3)C1)C2	3.7696
CCOC(=O)C1(CCN(C)CC1)C1=CC=CC=C1	3.768
C1C1=CC=CC(Cl)=C1NC1=NCCN1	3.7435
CN(C)CCN(CC1=CC=C(Cl)C=C1)C1=CC=CC=N1	3.7364
CCN(CCO)CCCC(C)NC1=C2C=CC(Cl)=CC2=NC=C1	3.7274
CCSC1=CC2=C(S(C3=CC=CC=C3N2CCCN2CCN(C)CC2)C=C1	3.7204
CCC1=C(C(N)=NC(N)=N1)C1=CC=C(Cl)C=C1	3.7158
CC(C)OC(=O)C(C)OC1=CC=C(C=C1)C(=O)C1=CC=C(Cl)C=C1	3.7
CC(C)C)NCC(O)C1=CC(O)=CC(O)=C1	3.683
COC1=CC=C(C=C1)C1C(=O)C2=CC=CC=C2C1=O	3.6757
CCCN1C2=C(NC=N2)C(=O)NC1=O	3.6597
OC(=O)CCCC1CCSS1	3.6596
NC1=CC(O)=C(C=C1)C(O)=O	3.6575
CCN(C(=O)C=CC)C1=CC=CC=C1C	3.6561
CC(C(O)=O)C1=CC=C(C=C1)C(=O)C1=CC=CC=C1	3.6541
OC(CCN1CCCC1)(C1CCCC1)C1=CC=CC=C1	3.6539
OC(=O)CN(CCN(CC(O)=O)CC(O)=O)CC(O)=O	3.6529
CC(N)C(=O)NC1=C(C)C=CC=C1C	3.6507
CC(C)C1(CC=C)C(=O)NC(=O)NC1=O	3.6424
O[C@H]1CNC(C1)C(O)=O	3.6252
OC1(CCN(CCCC(=O)C2=CC=C(F)C=C2)CC1)C1=CC=C(Cl)C=C1	3.6228
CCN1CCCC1CNC(=O)C1=CC(=C(N)C=C1OC)S(=O)(=O)CC	3.6183
CNC(C)CC1CCCC1	3.6151
CN1CC[C@H]1C1C1=CNC2=C1C=C(CCS(=O)(=O)C1=CC=CC=C1)C=C2	3.6081
NC(CCC(O)=O)C=C	3.5995
CC1=CC(OCC2CNC(=O)O2)=CC(C)=C1	3.5949
NC(=O)C1=CC=CC=C1O	3.5896
CCCCOC1=CC=C(C=C1)C(=O)CCN1CCCC1	3.5827
CC1=CC(OCCCC(C)C(O)=O)=C(C)C=C1	3.5725

Table 5 (continued)

	Calc pIC <sub>50</sub>
CCN(CC)C(=O)N1CCN(C)CC1	3.5702
CCOC(=O)C1=CN=CN1[C@H](C)C1=CC=CC=C1	3.5675
CCN1CCCC1CNC(=O)C1=C(OC)C=CC(=C1)S(N)(=O)=O	3.5621
C1C1=CC2=C(OC(=O)N2)C=C1	3.5614
CCN(CC1=CC=NC=C1)C(=O)C(CO)C1=CC=CC=C1	3.5501
O=C1N(C2CCC(=O)NC2=O)C(=O)C2=CC=CC=C12	3.5307
CC(C)(OC1=CC=C(CCNC(=O)C2=CC=C(C1)C=C2)C=C1)C(O)=O	3.5243
CC(OC1=C(C1)C=CC=C1)C1=NCCN1	3.5195
CC1CC(C(C)(C)C1)OC(=O)C(O)C1=CC=CC=C1	3.5093
OC(=O)COCCN1CCN(CC1)C(C1=CC=CC=C1)C1=CC=C(C1)C=C1	3.4952
CCCOC1=C(N)C=C(C=C1)C(=O)OCCN(CC)CC	3.4926
CN(C)CCOC(C1=CC=CC=C1)C1=CC=CC=C1	3.4886
COC(=O)C(C1CCCC1)C1=CC=CC=C1	3.488
CCCN[C@H]1CCCC=C(C1)SC(N)=N2	3.4868
FC1=CC=C(C=C1)C(N1CCN(CC1)C1=NC(NCC=C)=NC(NCC=C)=N1)C1=CC=C(F)C=C1	3.4866
CCCN1CCCC[C@H]1C(=O)NC1=C(C)C=CC=C1C	3.468
COC1=CC=C(CN(CCN(C)C)C2=NC=CC=C2)C=C1	3.4624
CC(=O)OC1=CC=CC=C1C(O)=O	3.455
OC(=O)CCCCCCCC(O)=O	3.4544
CN1C(=O)OC(C)(C)C1=O	3.45
CCCCN1CCCCC1C(=O)NC1=C(C)C=CC=C1C	3.4483
OC1=C2N=CC=CC2=C(C=C1)[N+][O-]=O	3.4432
CCC1(C)OC(=O)N(C)C1=O	3.4358
CC(CNC1CCCC1)OC(=O)C1=CC=CC=C1	3.4185
CC1=CC(=O)C2=CC=CC=C2C1=O	3.406
CCC1=C(C)NC2=C1C(=O)C(N1CCOCC1)CC2	3.392
O=C(OCC1=CC=CC=C1)C1=CC=CC=C1	3.3773
CC1=CC(CN2CCN(CC2)C2=CC=CC=C2)C2=CC=C(C1)C=C2)=CC=C1	3.3751
CCN(CC)CC(=O)NC1=C(C)C=CC=C1C	3.3688
CS(=O)(=O)C1=CC(C1)=C(C=C1)C(=O)NC1=CC=C(C1)C(=C1)C1=CC=CC=N1	3.3675
OC(CCN1CCCC1)C1CC2CC1C=C2)C1=CC=CC=C1	3.3635
O=C(C1CCCC1)N1CC2N(CCC3=CC=CC=C23)C(=O)C1	3.3627
CCCN(C)C(=O)NC1=CC=CC=C1C	3.3422
CC(C(O)=O)C1=CC2=C(C=C1)C1=C(N2)C=CC(C1)=C1	3.3392
CC(C)C1=CC=CC(C(C)C)=C1O	3.3379
COC1=CC=CC=C1OCC(O)CN1CCN(CC(=O)NC2=C(C)C=CC=C2)CC1	3.3373
CN1CCCCC1C(=O)NC1=C(C)C=CC=C1C	3.3366
CCC1(C)CC(=O)NC1=O	3.3363
[O-][N+](=O)C1=CC=C(O1)C=NN1CCOC1=O	3.3153
OC(=O)C1=CC=CC=C1O	3.3147
CC1=C(C)C(NC2=CC=CC=C2C(O)=O)=CC=C1	3.3142
CN1C2=C(NC=N2)C(=O)N(C)C1=O	3.3104
OC(=O)[C@H]1CCCN1	3.3103
CCCCC1=NN(CC2=CN=C(C=C2)C2=CC=CC=C2C2=NNN=N2)C(CCCC)=N1	3.3095
CCN(CC)CCOC(=O)C1=CC=C(N)C=C1	3.3078
CCCN1CCCC[C@H]1C(=O)NC1=C(C)C=CC=C1C	3.307
CC(N)C12CC3CC(C(C3)C1)C2	3.2932
CCCCC1=NC2(CCCC2)C(=O)N1CC1=CC=C(C=C1)C1=CC=CC=C1C1=NNN=N1	3.2863
CN1C=CNC1=S	3.2765
CC(CC1=CC=C(O)C=C1)NCC(O)C1=CC(O)=CC(O)=C1	3.2612
CCCC(=O)NC1=CC(C(C)=O)=C(OC(C)CNC(C)C)C=C1	3.2558
CC1=NC=C(N1CCO)[N+][O-]=O	3.2451
OC(CCN1CCCC1)C1CCCCC1)C1=CC=CC=C1	3.2362
CN1CCN(CC1)C(C1=CC=CC=C1)C1=CC=CC=C1	3.2288
CSC1=CC=C(C=C1)C(=O)C1=C(C)NC(=O)N1	3.227
CN(C)CCOC(C1=CC=CC=C1)C1=CC=CC=C1C	3.2248
OC(CCN1CCCC1)C1CCCC1)C1=CC=CC=C1	3.2185
NC1=CC=NC=C1	3.2158
CC1=CNN=C1	3.1896
COC1=C(OC)C=C2C(N)=NC(=NC2=C1)N1CCN(CC1)C(=O)C1COC2=CC=CC=C2O1	3.1822
CCC1=NC=CC(=C1)C(N)=S	3.1661



Table 5 (continued)

	Calc pIC <sub>50</sub>
CCN(CC)CCNC(=O)C1=CC=C(N)C=C1	3.166
COC1=CC=C(C(C(C)NCC(O)C2=CC(NC=O)=C(O)C=C2)C=C1	3.165
CCOCCN1C(=NC2=CC=CC=C12)N1CCCN(C)CC1	3.1551
CSC1=CC2=C(SC3=CC=CC=C3N2CCC2CCCCN2C)C=C1	3.1429
N[C@H]1CC1C1=CC=CC=C1	3.136
C[C@H](N)C(O)=O	3.1245
OC(=O)P(O)(O)=O	3.1094
CCN(CC)C(C)C(=O)C1=CC=CC=C1	3.1013
CNC1(C)C2CCC(C2)C1(C)C	3.1002
OCCCC([O-])=O	3.0886
CC1=CC(OCC(O)CNC(C)(C)C)=C(C1)C=C1	3.0855
CN1C2=C(C=C(C1)C=C2)C(=NCC1=O)C1=CC=CC=C1	3.0848
OC(=O)CCC(O)=O	3.0847
CCC1(C(=O)NC(=O)N(C)C1=O)C1=CC=CC=C1	3.0826
CN1C(=O)CC(C)(C1=O)C1=CC=CC=C1	3.0796
CCC1(CC)C(=O)NCC(C)C1=O	3.0788
CN1C(CC(O)=O)=CC=C1C(=O)C1=CC=C(C)C=C1	3.0748
CC(C)[C@H](N)C(O)=O	3.0747
CCOC(=O)C(C)OC1=CC=C(C1)C=C1	3.073
NC1=NC(N)=C(N=N1)C1=C(C1)C(C1)=CC=C1	3.0561
OC(=O)CC1=CC=CC=C1NC1=C(C1)C=CC=C1C1	3.0542
NC1=CC(=NC(N)=N+][O-])N1CCCC1	3.052
CN1CCN2C(C1)C1=CC=CC=C1CC1=CC=CC=C21	3.0512
OC(CCCN1CCCC1)(C1=CC=CC=C1)C1=CC=CC=C1	3.0364
O=C1C(C(=O)C2=CC=CC=C12)C1=CC=CC=C1	3.0293
CCC1(CCC(=O)NC1=O)C1=CC=C(N)C=C1	3.0264
CCC1C2=CC(OC)=C(OC)C=C2C(=NN=C1C)C1=CC(OC)=C(OC)C=C1	3.0217
OC(C)COC1=CC=C(C1)C=C1	3.021
CCN(CC)CCCC(C)NC1=C2C=CC(C1)=CC2=NC=C1	3.014
COC1=C(OCCCN2CCOCC2)C=C2C(NC3=CC(C1)=C(F)C=C3)=NC=NC2=C1	3.0046
CN1N(C(=O)C=C1C)C1=CC=CC=C1	2.9964
NC1=CC(C(O)=O)=C(O)C=C1	2.9921
CCOC(=O)NC1=C(N)C=C(NCC2=CC=C(F)C=C2)C=C1	2.9857
ClC1=C(CCN2CCN(CC2)C2=NSC3=CC=CC=C23)C=C2CC(=O)NC2=C1	2.984
OC1=C(C1)C=C(C1)C2=C1N=CC=C2	2.9785
CCOC(=O)C1=CC=C(N)C=C1	2.9674
NC1=NC(=O)C2=C(N1)N(COCCO)C=N2	2.9585
ClC1=C(NC2=NCCN2)C2=NSN=C2C=C1	2.9531
CC(=O)NC1=CC=C(O)C=C1	2.9383
CN(C)CCOC(C1=CC=C(C1)C=C1)C1=CC=CC=N1	2.933
ClC1=CC=C(C=C1)C(=O)NCCN1CCOCC1	2.9176
CC1=CC=C(C(O)C(C)=C1CC1=NCCN1)C(C)(C)C	2.908
CN1CCN(CC1)C1=NC2=CC(C1)=CC=C2NC2=CC=CC=C12	2.8934
O[Bi]1OC(=O)C2=CC=CC=C2O1	2.8838
CC1=CC(=NO1)C(=O)NCC1=CC=CC=C1	2.8838
NCC1(CC(O)=O)CCCC1	2.8533
OC(=O)C1=CC=C(NC(=O)[C@H](CC2=CC=C(O)C=C2)NC(=O)C2=CC=CC=C2)C=C1	2.8411
CC(C(O)=O)C1=CC(OC2=CC=CC=C2)=CC=C1	2.8189
CC[C@H](C)[C@H](N)C(O)=O	2.7924
CN1CCN2C(C1)C1=CC=CC=C1CC1=C2N=CC=C1	2.7413
CC(C)NC1=C(N=CC=C1)N1CCN(CC1)C(=O)C1=CC2=C(N1)C=CC(NS(C)(=O)=O)=O=C2	2.7251
CCC1(C(=O)NC(=O)NC1=O)C1=CC=CC=C1	2.7218
OC1=CC=CC=C1	2.7195
NC(=O)C1=NC=CN=C1	2.7092
ClC1=CC=C2N=C3NC(=O)CN3CC2=C1Cl	2.6664
CC1=C(C1)C(NC2=CC=CC=C2C(O)=O)=C(C1)C=C1	2.665
OC1=CC=C(OCC2=CC=CC=C2)C=C1	2.6436
NC1=CC=C(C=C1)S(N)(=O)=O	2.5847
CCCC1=CC(=O)NC(=S)N1	2.5686
CC(C)C(=O)C1=CN=CC=C1)C1=CN=CC=C1	2.5476
OC(=O)C1=CN=CC=C1	2.5144



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