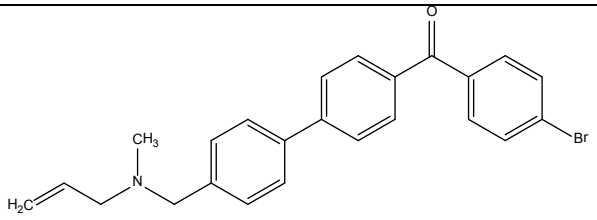
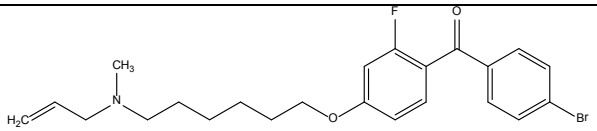
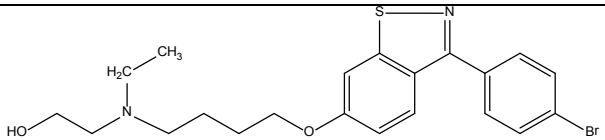
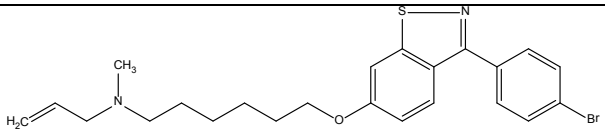
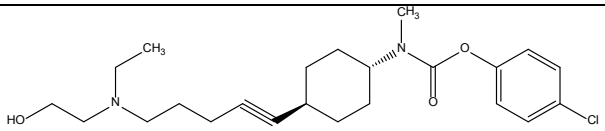
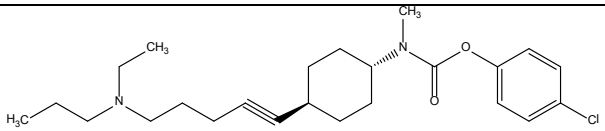
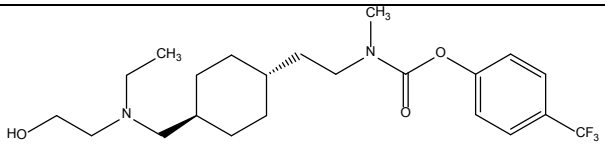
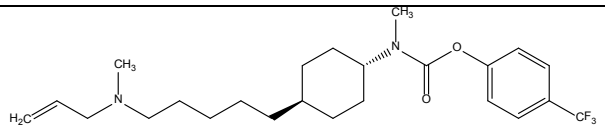
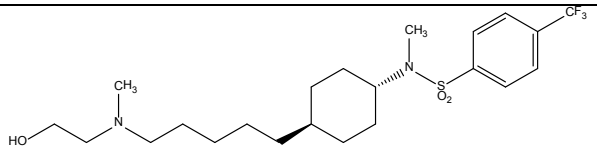
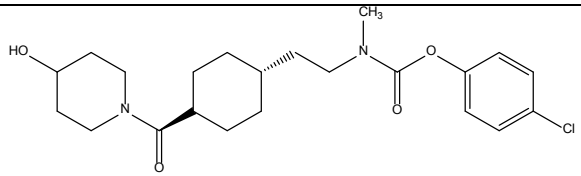
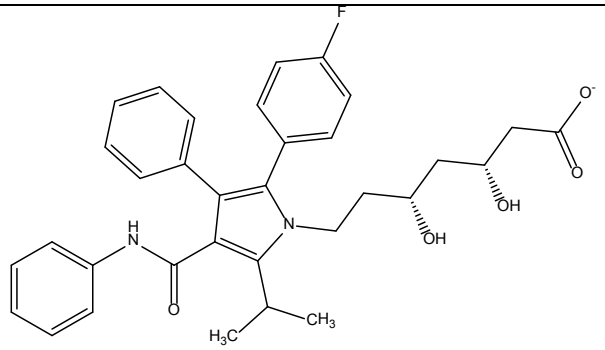
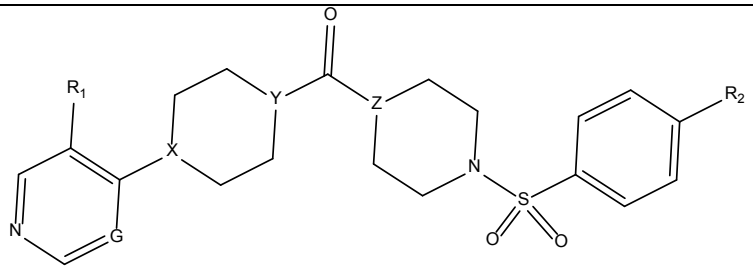
Supplementary information

Table S1a: Structure and activity of compounds considered for the studies (QSAR, Pharmacophore and Docking)

Comp code	Structures	Activity (nm)	pIC_{50}
	Series A		
A-1		8	8.10
A-2		5.7	8.24
A-3		17.8	7.75
A-4		2.9	8.54
A-5		10	8.00
A-6		7.8	8.11
A-7		12.7	7.90

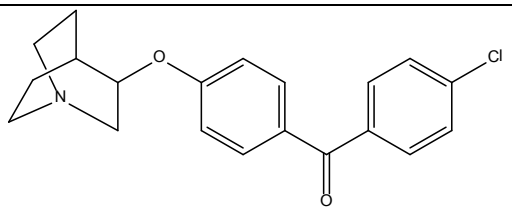
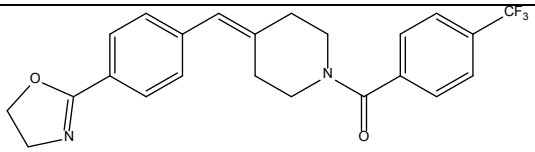
A-8		5	8.30
A-9		11.2	7.95
A-10		28.7	7.54
A-11		--	--

Series B

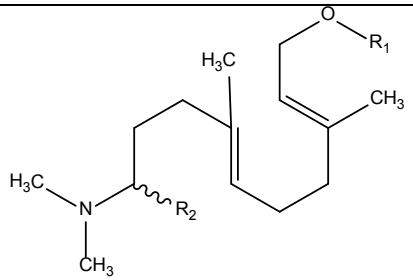


B-1, B-3, B-5 to B-15

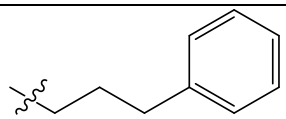
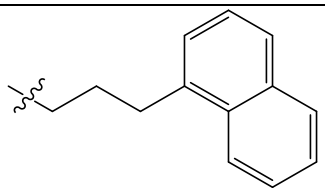
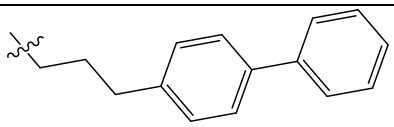
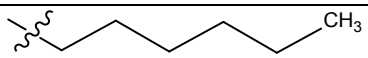
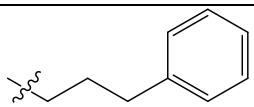
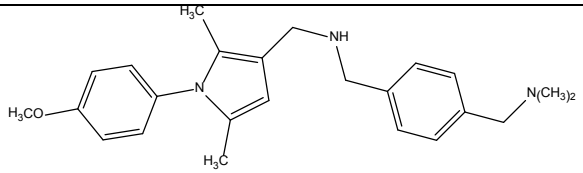
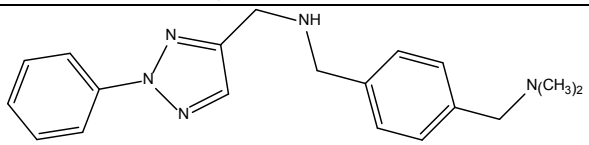
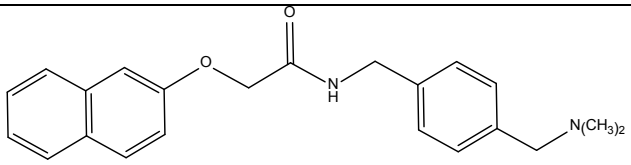
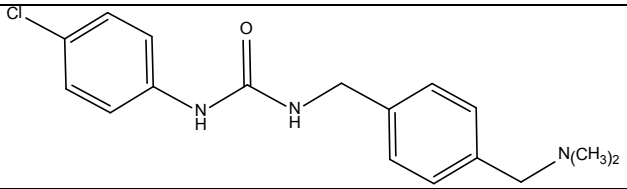
	G	X	Y	Z	R_1	R_2		
B-1	C	N	C	N	H	Br	228	6.64
B-2	N	N	C	N	H	Br	116	6.94

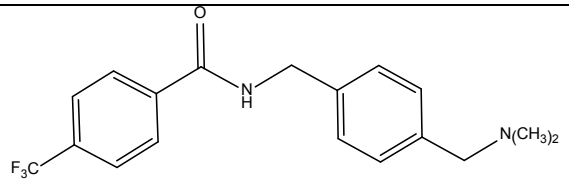
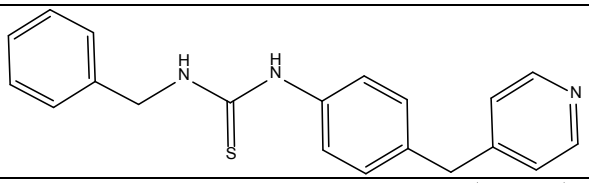
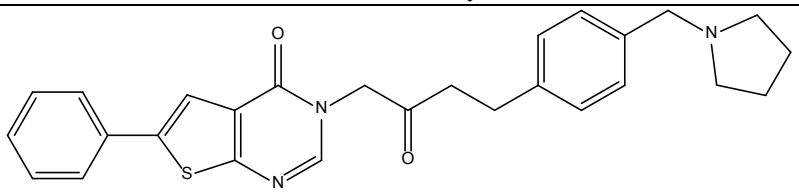
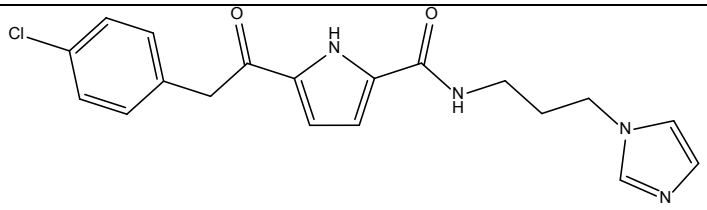
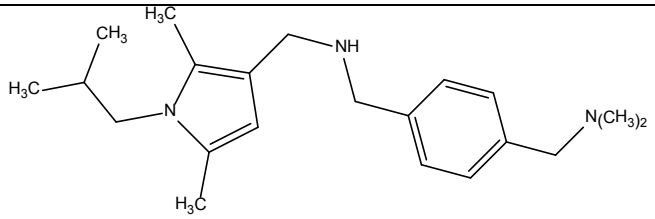
B-3							58	7.24
B-4							90	7.05
B-5	C	N	N	N	Cl	Cl		
B-6	C	N	N	N	Cl	Br		
B-7	C	N	N	N	Cl	F		
B-8	C	N	N	N	Cl	CF_3		
B-9	C	N	C	N	Br	Br		
B-10	C	N	C	N	F	CF_3		
B-11	N	N	C	N	Br	Br		
B-12	C	C	N	N	H	Cl		
B-13	C	C	N	N	H	Br		
B-14	C	C	N	N	H	F		
B-15	C	C	N	C	H	Br		

Series C

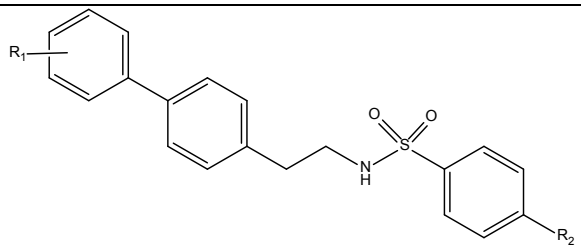


	R_1	R_2
C-1	H	H

C-2		H	1.1	8.96
C-3		H		
C-4		H	4.5	8.35
C-5		H	0.85	9.07
C-6		=O		
	Series D			
D-1			12700	4.9
D-2			1410	5.85
D-3			10800	4.97
D-4			3120	5.51

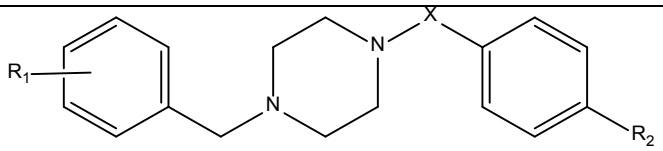
D-5		1380	5.86
D-6		4750	5.32
D-7		5020	5.30
D-8			
D-9			

Series E

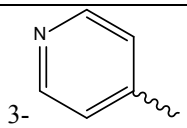
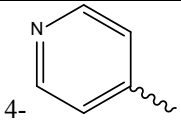
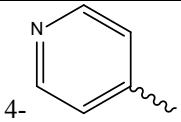
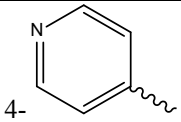
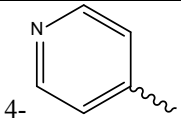
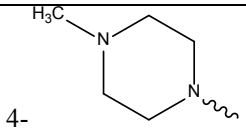
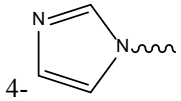
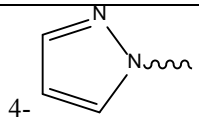


E-1 to E-3

	R_1	R_2		
E-1	3-[(N,N-Dimethylamino) methyl]	CN		
E-2	4-[(N,N-Dimethylamino) methyl]	CN	28	7.55
E-3	4-[(Pyrrolidin-1-yl) methyl]	Cl	63	7.20



E-4 to E-17

	R_1	R_2	X		6.30
					7.89
E-4	 3-	Cl	$-SO_2-$	500	8.52
E-5	 4-	Cl	$-SO_2-$	13	6.50
E-6	 4-	Cl	-CO-	3	5.60
E-7	 4-	Cl	$-CH_2-$	316	7.40
E-8	 4-	OCH_3	-CO-	2511	7.49
E-9	$4\text{-}CH_2N(CH_3)_2$	Cl	-CO-	40	7.70
E-10	$4\text{-}CH_2N(CH_3)_2$	Cl	$-SO_2-$	32	8.22
E-11	$4\text{-}CH_2N(CH_3)_2$	OCF_3	-CO-	20	7.49
E-12	 4-	Cl	$-SO_2-$	6	7.55
E-13	 4-	Cl	-CO-	32	7.20
E-14	 4-	Cl	-CO-		

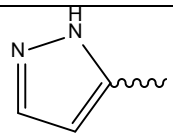
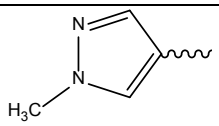
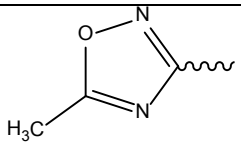
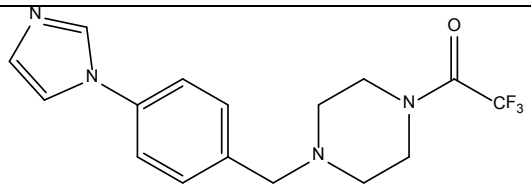
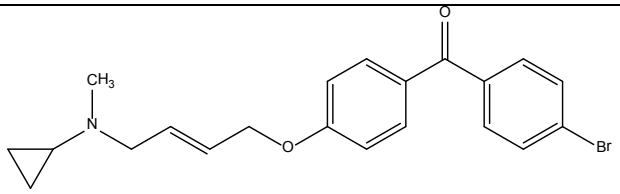
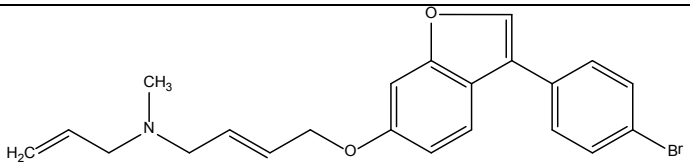
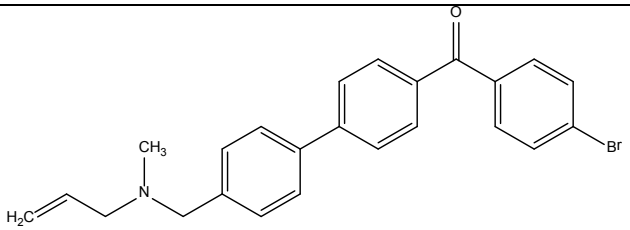
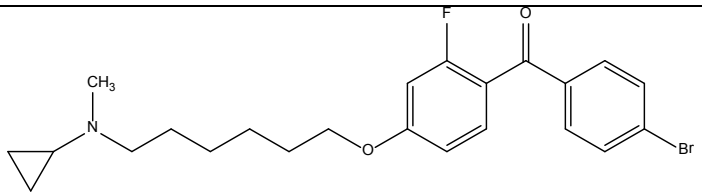
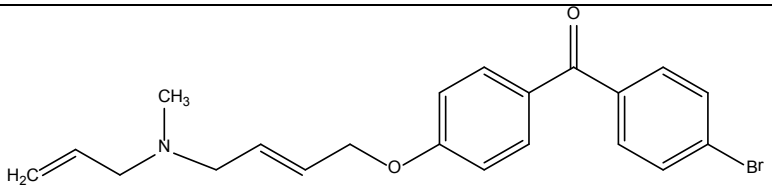
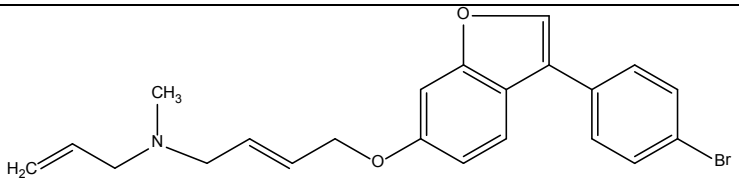
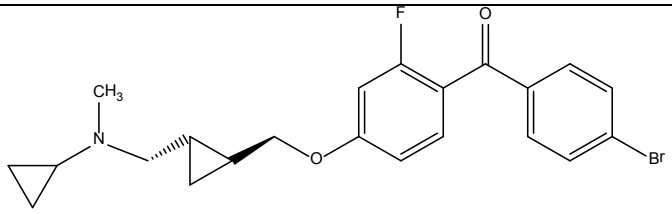
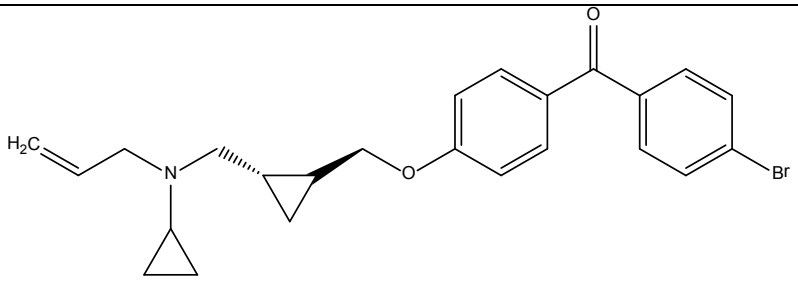
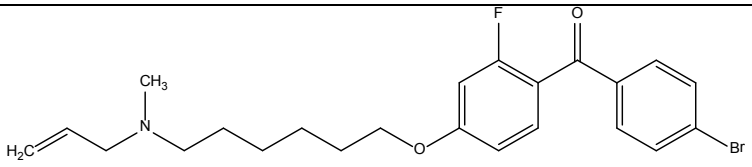
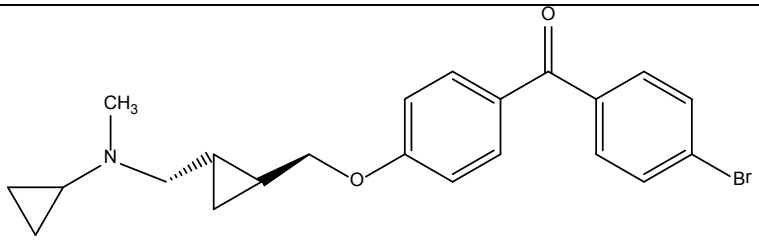
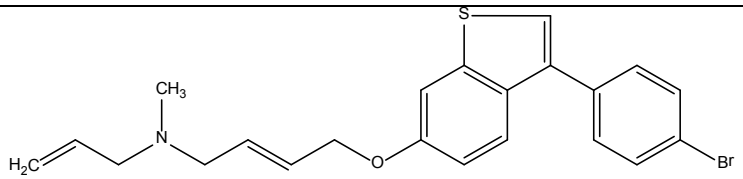
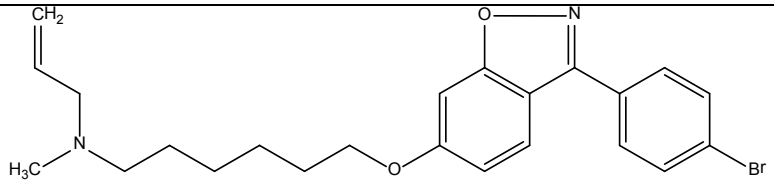
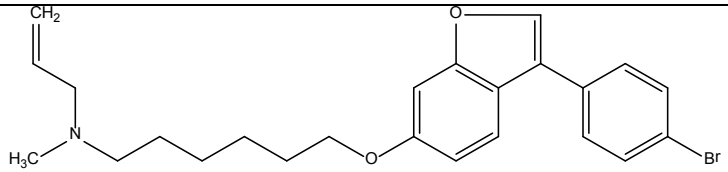
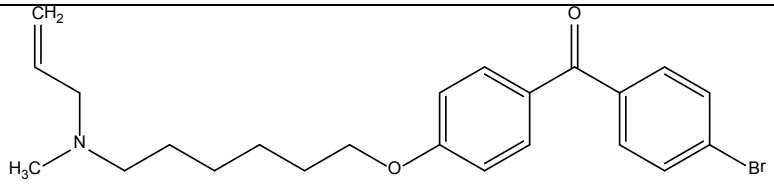
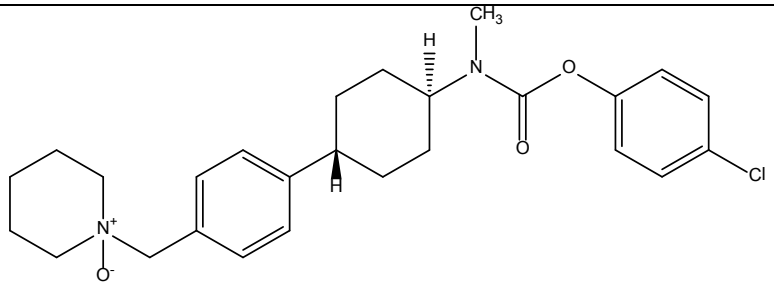
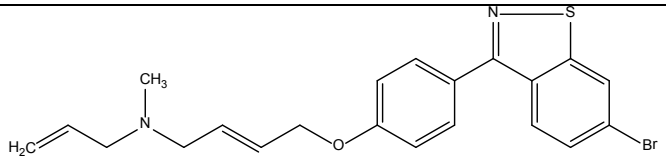
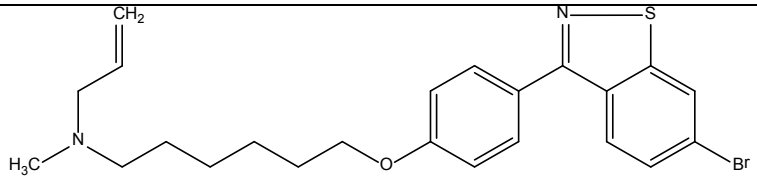
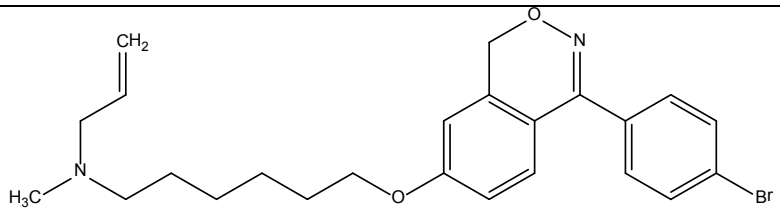
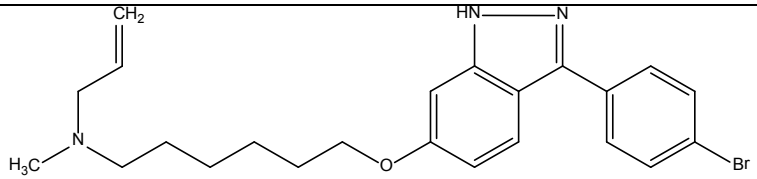
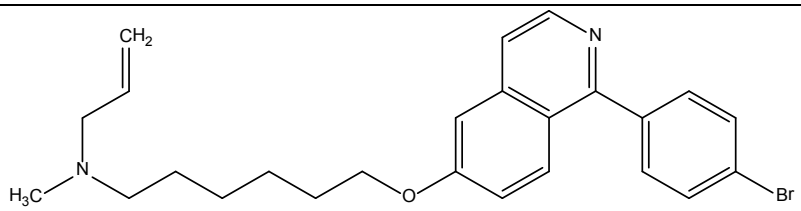
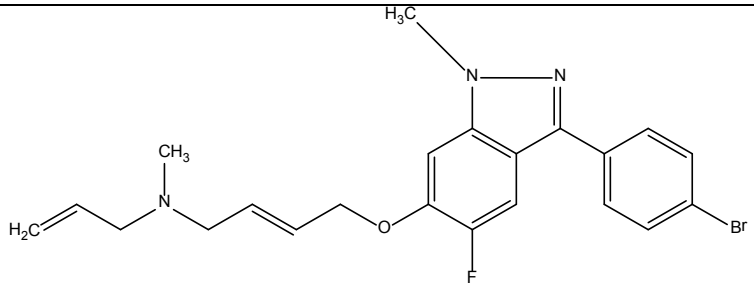
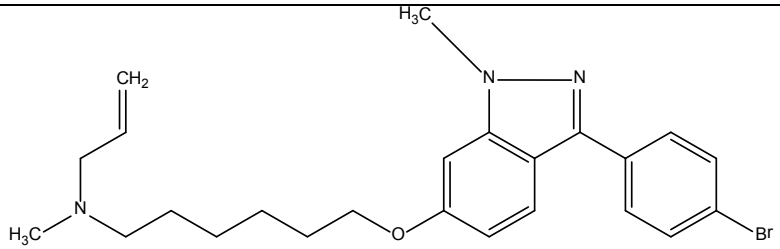
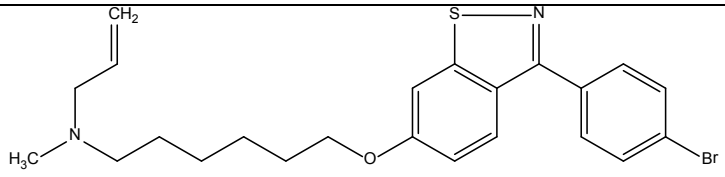
E-15		Cl	-CO-
E-16		Cl	-CO-
E-17		Cl	-CO-
E-18			

Table S1b: Structure and activity of compounds considered for the studies (QSAR, Pharmacophore and Docking)

Comp code	Structures	Activity (nm)	pIC_{50}
F-1		19	7.72
F-2		500	6.30
F-3		16	7.79

F-4		98	7.01
F-5		3	8.52
F-6		29	7.54
F-7		439	6.36
F-8		223	6.65
F-9		6.5	8.19
F-10		22	7.66

F-11		13.5	7.87
F-12		380	6.42
F-13		610	6.21
F-14		5.4	8.27
F-15		640	6.19
F-16		1860	5.73
F-17		1900	5.72

F-18		4.1	8.39
F-19		39	7.41
F-20		3.5	8.46
F-21		29	7.54
F-22		19.6	7.71
F-23		2.9	8.54

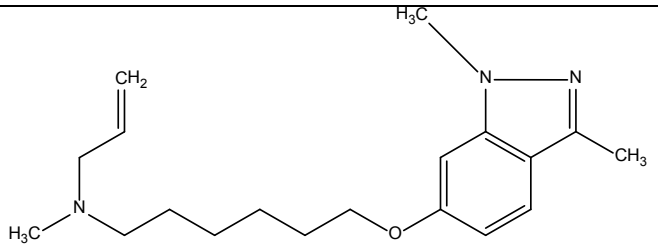
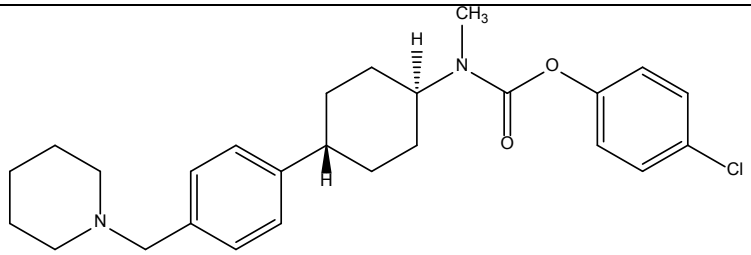
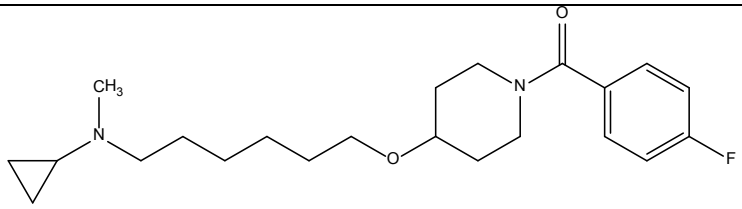
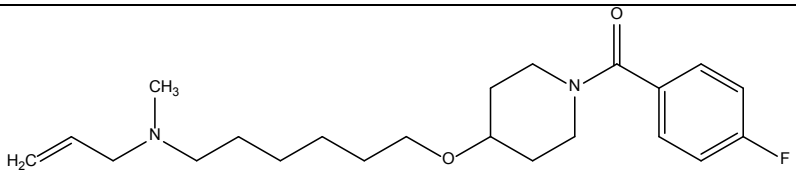
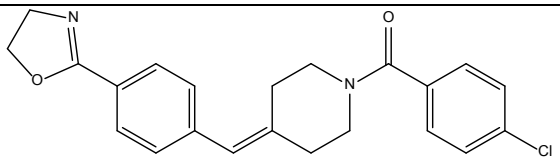
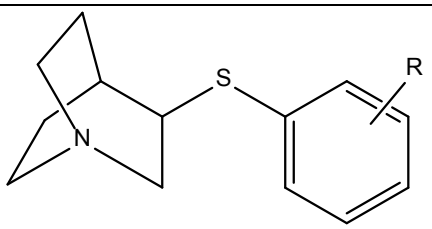
F-24		240	6.62
F-25		11.3	7.95
F-26		48	7.32
F-27		71	7.15
F-28		36	7.44

Table S1c: Structure and activity of compounds considered for the studies (Pharmacophore and Docking)

Comp Code	Structures
	

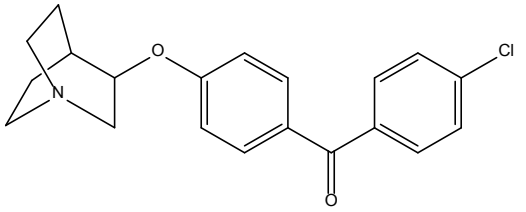
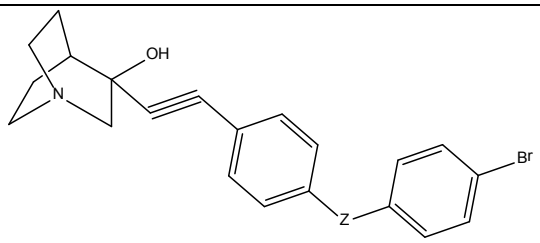
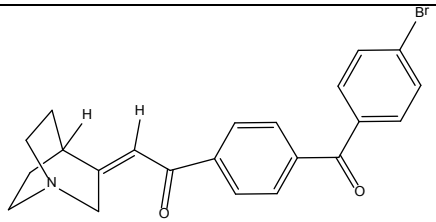
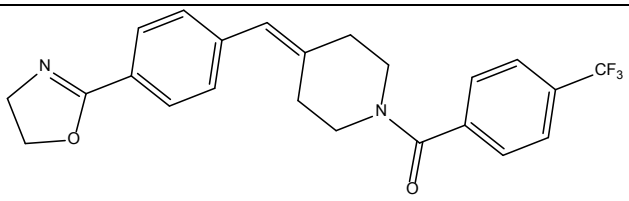
	G-1 to G-3
G-1	2-Br
G-2	3-Br
G-3	4-Br
G-4	
	
	G-5 to G-9
G-5	CO
G-6	O
G-7	S
G-8	SO
G-9	SO_2
G-10	
G-11	

Table S2: Physicochemical descriptor values of the descriptors contributed in the QSAR models

Comp Code	Activity	E_oop	KierA2	DASA	SlogP_VSA0	E_tor	vsurf_Wp6	std_dim2	vsurf_HL1	KierFlex	SlogP_VSA2	lip_don	a_nCl
A-1	8.10	0.02	8.22	13.47	3.12	10.80	1.25	1.25	0.02	5.13	0	1	0
A-2	8.24	0.03	11.32	50.59	14.12	-0.88	1.25	1.57	0.04	8.38	9.12	1	0
A-3	7.75	0.00	10.50	11.53	39.51	-0.51	1.25	1.44	0.05	7.89	0	2	0
A-4	8.54	0.01	10.89	37.55	14.12	-4.50	1.00	1.18	0.03	8.03	0	1	0
A-5	8.00	0.03	12.30	30.25	39.51	-4.90	1.62	1.75	0.04	9.38	3.98	2	1
A-6	8.11	0.03	12.30	46.84	14.12	-8.96	1.25	1.71	0.02	9.38	3.98	1	1
A-7	7.90	0.06	11.04	29.23	39.51	-5.17	0.50	1.85	0.05	8.32	0	2	0
A-8	8.30	0.07	11.42	27.78	14.12	-6.09	1.50	1.91	0.03	8.46	3.98	1	0
A-9	7.95	0.04	11.89	61.53	28.51	-12.42	1.50	2.19	0.06	9.98	10.62	2	0
A-10	7.54	0.04	10.04	44.04	36.38	-5.41	0.50	2.18	0.07	7.14	30.33	1	1
A-11	--	0.03	11.99	4.024	93.45	23.78	4.12	2.55	0.18	7.33	45.92	3	0
B-1	6.64	0.07	9.28	9.35	19.91	-0.52	1.37	1.94	0.03	6.48	30.50	1	0
B-2	6.93	0.02	9.24	29.01	3.12	-2.34	0.00	1.69	0.07	6.43	30.50	0	0
B-3	7.24	0.01	6.34	10.48	14.12	6.83	0.62	1.57	0.03	3.82	6.47	1	1
B-4	7.04	0.03	7.56	28.64	0.00	8.31	0.00	1.34	0.07	4.34	11.00	0	0
B-5	--	0.97	9.47	8.07	19.91	11.49	1.50	1.52	0.03	6.67	6.64	1	2
B-6	--	0.94	9.80	20.98	19.91	11.40	1.37	1.51	0.03	7.13	6.64	1	1
B-7	--	0.95	8.96	44.81	19.91	11.60	1.62	1.52	0.03	5.98	15.76	1	1
B-8	--	0.97	9.56	37.65	19.91	12.30	1.12	1.51	0.04	6.54	6.64	1	1
B-9	--	0.08	10.31	85.08	19.91	6.99	1.50	1.94	0.03	7.89	30.50	1	0
B-10	--	0.06	9.25	18.65	19.91	1.62	1.37	1.89	0.05	6.12	39.62	1	0
B-11	--	0.59	10.27	122.54	3.12	5.73	0.00	1.86	0.07	7.82	30.50	0	0
B-12	--	0.75	8.95	14.41	0.00	-6.91	0.00	2.06	0.06	6.05	6.64	0	1
B-13	--	0.77	9.28	36.99	0.00	-7.69	0.00	2.08	0.05	6.48	6.64	0	0

B-14	--	0.74	8.45	28.25	0.00	-7.45	0.00	2.06	0.07	5.40	15.76	0	0
B-15	--	0.52	9.45	26.89	0.00	-1.71	0.00	2.13	0.06	6.73	30.50	0	0
C-1	--	0.05	9.10	113.10	28.51	-9.97	0.75	1.78	0.01	8.21	0	2	0
C-2	8.96	0.05	12.71	117.36	3.12	-9.41	0.00	1.82	0.01	9.93	11.00	1	0
C-3	--	0.05	12.12	111.56	3.12	-9.47	0.00	1.79	0.01	8.65	11.00	1	0
C-4	8.35	0.06	13.30	124.16	3.12	-4.71	0.00	1.90	0.01	9.45	11.00	1	0
C-5	--	0.05	14.69	86.32	3.12	-17.09	0.00	1.83	0.01	13.64	11.00	1	0
C-6	9.07	0.02	11.94	104.70	0.00	-11.55	0.00	2.07	0.02	8.89	34.86	0	0
D-1	4.89	0.12	8.30	150.15	32.13	14.06	4.75	2.24	0.01	5.20	0	3	0
D-2	5.85	0.01	6.92	128.91	21.13	2.09	3.87	2.29	0.06	3.95	0	3	0
D-3	4.97	0.01	7.54	81.69	32.13	1.40	2.25	1.94	0.04	4.37	23.86	2	0
D-4	5.51	0.02	7.13	32.94	21.13	1.79	13.37	1.32	0.05	4.60	0	3	1
D-5	5.86	0.05	6.65	19.26	21.13	8.26	3.12	1.36	0.09	4.18	0	2	0
D-6	5.32	0.11	7.16	91.33	18.01	5.88	12.00	1.52	0.05	3.99	0	2	0
D-7	5.30	0.20	9.07	9.57	3.12	-0.66	1.75	2.76	0.07	5.25	40.65	1	0
D-8	--	0.10	7.58	6.01	18.01	1.23	1.62	2.07	0.11	4.42	16.78	2	1
D-9	--	0.06	7.85	130.44	21.13	-3.02	5.25	1.85	0.01	5.46	0	3	0
E-1	--	0.01	8.29	22.16	19.53	-1.45	2.75	1.79	0.04	5.13	6.64	1	0
E-2	7.55	0.01	8.29	16.24	19.53	-1.69	2.37	1.92	0.04	5.13	6.64	1	0
E-3	7.20	0.03	9.88	52.27	19.53	-5.06	4.37	1.71	0.06	6.68	6.64	2	1
E-4	6.30	0.02	8.58	24.31	3.12	-0.33	1.87	1.67	0.04	5.63	6.64	1	1
E-5	7.89	0.01	8.58	26.52	3.12	-0.37	2.00	1.35	0.04	5.63	6.64	1	1
E-6	8.52	0.04	7.77	61.63	3.12	6.89	1.87	2.02	0.05	4.48	0	1	1
E-7	6.50	0.01	8.01	82.80	6.25	2.13	4.00	1.94	0.03	4.79	0	2	1
E-8	5.60	0.02	7.93	147.16	14.12	8.30	2.12	2.35	0.05	4.42	0	1	0
E-9	7.40	0.04	8.16	32.23	6.25	2.89	3.37	2.06	0.03	5.36	0	2	1

E-10	7.49	0.02	8.99	3.41	6.25	-4.49	3.37	1.24	0.02	6.74	6.64	2	1
E-11	7.70	0.07	8.80	3.46	17.25	5.48	3.12	2.50	0.05	5.72	0	2	0
E-12	8.22	0.05	9.47	4.88	9.37	-0.76	3.62	1.33	0.02	6.75	6.64	2	1
E-13	7.49	0.04	7.26	22.69	3.12	1.72	1.75	1.28	0.05	4.14	0	1	1
E-14	--	0.05	7.26	7.89	3.12	1.69	1.87	1.27	0.04	4.14	0	1	1
E-15	--	0.02	7.26	14.40	3.12	3.43	3.37	1.24	0.06	4.14	16.66	2	1
E-16	--	0.04	7.50	9.73	3.12	3.17	2.25	1.94	0.05	4.37	0	1	1
E-17	--	0.02	7.62	25.44	3.12	3.26	2.25	1.28	0.07	4.51	0	1	1
E-18	--	0.01	5.99	14.77	3.12	-2.44	2.00	1.31	0.09	3.51	23.86	1	0
F-1	7.72	0.02	8.20	23.40	14.12	8.24	1.75	1.43	0.03	5.47	3.98	1	0
F-2	6.30	0.01	8.62	3.35	14.12	-1.82	1.37	1.27	0.01	5.68	0	1	0
F-3	7.79	0.02	8.22	15.27	3.12	10.30	1.87	1.37	0.02	5.13	0	1	0
F-4	7.01	0.02	9.99	1.78	14.12	4.68	1.50	1.29	0.03	7.12	13.10	1	0
F-5	8.52	0.02	9.42	3.79	14.12	1.16	1.25	1.52	0.03	6.54	0	1	0
F-6	7.54	0.01	8.62	4.33	14.12	-1.73	1.25	1.33	0.01	5.68	0	1	0
F-7	6.36	0.03	7.65	28.15	14.12	18.66	1.37	1.49	0.03	5.03	13.10	1	0
F-8	6.65	0.07	8.44	37.11	14.12	25.89	1.75	2.11	0.03	5.50	3.98	1	0
F-9	8.19	0.03	11.32	49.71	14.12	-1.43	1.12	1.61	0.04	8.38	9.12	1	0
F-10	7.66	0.02	7.47	44.27	14.12	17.90	1.00	1.50	0.03	4.87	3.98	1	0
F-11	7.87	0.01	9.20	28.99	14.12	-0.09	1.50	1.47	0.01	6.45	0	1	0
F-12	6.42	0.01	10.26	44.11	14.12	-5.77	1.00	1.63	0.03	7.14	0	1	0
F-13	6.21	0.01	10.31	27.92	14.12	-4.90	1.12	1.38	0.01	7.21	0	1	0
F-14	8.27	0.02	11.27	26.05	14.12	-2.46	1.25	1.81	0.02	8.31	0	1	0
F-15	6.19	0.04	9.90	27.89	11.00	-7.71	0.00	2.14	0.04	6.65	3.98	0	1
F-16	5.73	0.01	9.15	57.57	14.12	-0.85	1.75	1.47	0.03	6.39	0	1	0
F-17	5.72	0.00	10.89	36.09	14.12	-4.27	1.00	1.56	0.03	8.03	0	1	0

F-18	8.39	0.03	10.97	31.08	14.12	0.39	1.25	1.51	0.02	7.74	11.22	1	0
F-19	7.41	0.01	10.05	1.84	14.12	-5.77	3.37	1.67	0.03	6.86	16.66	2	0
F-20	8.45	0.00	10.64	24.89	14.12	-1.89	1.37	1.96	0.03	7.29	0	1	0
F-21	7.54	0.01	8.75	7.19	14.12	-2.14	1.62	1.79	0.03	5.75	9.12	1	0
F-22	7.71	0.01	10.24	1.75	14.12	-5.76	1.00	1.93	0.02	7.09	0	1	0
F-23	8.54	0.01	10.89	29.28	14.12	-4.09	1.12	1.29	0.03	8.03	0	1	0
F-24	6.62	0.00	8.10	94.12	14.12	-8.86	1.00	1.55	0.03	5.51	0	1	0
F-25	7.95	0.06	10.10	7.96	14.12	-8.01	2.00	2.20	0.02	6.70	3.98	1	1
F-26	7.32	0.02	9.60	76.09	3.12	3.12	1.12	1.38	0.05	6.62	30.57	1	0
F-27	7.15	0.02	10.95	45.74	3.12	-4.39	1.00	1.57	0.04	7.85	26.59	1	0
F-28	7.44	0.03	7.42	0.42	0.00	7.31	0.00	2.04	0.05	4.33	11.00	0	1
G-1	--	0.00	5.21	36.45	3.12	6.06	0.50	1.37	0.00	3.99	2.77	1	0
G-2	--	0.00	5.21	54.78	3.12	4.67	0.50	1.37	0.00	3.99	2.77	1	0
G-3	--	0.00	5.21	57.06	3.12	4.78	0.50	1.33	0.00	3.99	2.77	1	0
G-4	--	0.02	6.34	21.52	14.12	8.57	0.62	1.36	0.03	3.82	6.47	1	1
G-5	--	0.02	6.73	41.32	28.51	9.02	1.12	1.45	0.05	4.15	0	2	0
G-6	--	0.06	6.75	16.13	39.51	10.19	1.50	1.50	0.02	4.25	0	2	0
G-7	--	0.01	7.22	50.18	28.51	6.69	1.37	1.51	0.02	4.85	0	2	0
G-8	--	0.00	7.46	20.56	28.51	8.65	1.62	1.43	0.08	5.08	19.55	2	0
G-9	--	0.04	7.36	89.95	28.51	-7.36	1.37	1.53	0.04	5.08	6.88	2	0
G-10	--	0.04	6.95	53.33	3.12	7.12	0.50	1.53	0.04	4.22	0	1	0
G-11	--	0.02	7.56	36.58	0.00	7.78	0.00	1.24	0.06	4.34	11.00	0	0

Table S3: Observed and Predicted activities of the training, test set (test set-1) and inactive compounds

Comp. code	Observed Activity	Predicted Activities													
		Model 1					Model 2					Model 3			
		Pred.	LOO	LMO	BS	Test	Pred.	LOO	LMO	BS	Test	Pred.	LOO	LMO	BS	Test
A-1*	8.10					7.59					7.08					6.96
A-2	8.24	8.39	8.08	8.01	8.56		7.78	8.74	8.52	8.55		8.31	8.17	8.59	8.15	
A-3	7.75	8.04	7.35	7.54	7.00		7.70	7.81	7.42	7.95		7.41	8.13	7.29	7.69	
A-4	8.54	8.59	8.48	8.04	8.06		8.78	8.25	8.05	8.11		8.46	8.62	8.01	8.05	
A-5*	8.00					8.38					7.90					9.02
A-6*	8.11					8.88					8.74					8.80
A-7	7.90	7.47	8.46	7.45	8.35		7.90	7.89	8.29	7.25		7.63	8.20	7.26	7.54	
A-8	8.30	8.18	8.44	8.66	8.76		8.05	8.58	8.69	8.82		8.54	8.03	8.95	8.95	
A-9	7.95	8.06	7.83	7.07	7.42		8.00	7.89	7.29	8.54		8.10	7.76	8.45	8.39	
A-10	7.54	7.18	7.98	7.85	7.95		7.22	7.95	7.11	7.12		7.86	7.10	7.85	7.39	
A-11**						7.18					1.73					5.42
B-1	6.64	7.11	6.13	6.92	6.87		7.36	5.89	6.95	6.88		6.53	6.78	6.93	6.94	
B-2*	6.94					7.90					7.52					7.48
B-3	7.24	6.51	8.10	7.92	7.36		7.15	7.34	7.85	7.54		7.02	7.50	7.63	7.59	
B-4	7.05	7.13	6.95	7.59	7.85		6.89	7.27	7.69	7.71		7.12	6.94	7.01	7.02	
B-5**						-3.68					6.57					9.48
B-6**						-3.36					6.64					8.74
B-7**						-3.99					6.47					7.80
B-8**						-3.95					6.39					8.43
B-9**						6.87					6.55					7.26

B-10**						7.10					6.96				6.00
B-11**						0.67					6.51				8.21
B-12**						-0.89					7.80				9.15
B-13**						-1.12					7.91				8.39
B-14**						-1.11					7.74				7.49
B-15**						2.02					7.17				7.64
C-1**						6.25					8.89				7.58
C-2	8.96	8.54	9.51	8.25	8.26		8.99	8.91	8.39	8.63		9.05	8.85	8.34	8.16	
C-3**						8.32					9.06				8.38
C-4	8.35	8.66	7.91	8.02	8.66		8.43	8.25	8.01	8.75		8.79	7.83	8.79	8.69	
C-5	9.07	8.72	9.52	9.92	8.51		8.81	9.39	9.85	9.84		8.60	9.73	9.68	9.85	
C-6**						9.77					9.82				10.97
D-1	4.9	4.62	5.41	4.18	5.72		5.17	4.38	4.32	5.49		5.03	4.70	4.59	4.35	
D-2*	5.85					5.68					5.86				5.38
D-3*	4.97					6.14					5.85				4.70
D-4	5.51	6.45	4.44	5.22	5.86		5.56	5.40	5.92	5.12		5.71	5.24	5.99	5.98	
D-5	5.86	5.98	5.72	5.15	5.29		6.04	5.59	5.69	5.44		5.48	6.32	5.36	5.26	
D-6	5.32	4.92	5.85	5.03	5.56		5.09	5.69	4.92	5.78		5.38	5.25	5.01	5.95	
D-7	5.30	5.82	3.74	5.05	5.85		5.87	4.42	5.69	5.98		5.51	4.90	5.99	5.96	
D-8**						5.97					6.03				5.97
D-9**						5.50					7.33				5.17
E-1**						7.27					7.25				6.71

E-2	7.55	7.34	7.78	7.88	7.85	7.19	7.93	7.96	7.81	6.71	8.50	7.95	7.82	
E-3	7.20	7.58	6.79	6.79	7.84	7.31	7.08	6.85	7.59	7.52	6.83	7.62	7.65	
E-4*	6.30					6.70				6.79				6.96
E-5	7.89	7.72	8.07	7.49	8.29	7.82	7.96	7.12	7.15	7.96	7.80	7.99	7.51	
E-6*	8.52					8.73				8.23				7.60
E-7	6.50	7.01	5.91	6.12	6.91	6.69	6.30	6.95	6.95	6.79	6.17	7.12	6.12	
E-8	5.60	6.09	4.87	5.15	5.95	5.57	5.63	6.12	6.05	6.59	4.39	5.01	5.09	
E-9	7.40	7.08	7.74	7.02	7.89	6.56	8.32	7.92	7.94	7.08	7.75	7.85	7.91	
E-10	7.49	7.96	6.97	7.03	7.02	8.37	6.47	7.98	7.79	7.55	7.43	7.99	7.86	
E-11*	7.70					7.02				7.04				7.28
E-12	8.22	7.79	8.70	7.79	7.94	7.86	8.63	7.85	8.67	7.56	8.98	8.95	8.66	
E-13	7.49	6.82	8.27	7.85	7.95	7.61	7.36	7.97	7.87	7.43	7.58	7.01	7.95	
E-14**						6.84				7.64				7.43
E-15**						7.11				7.02				5.83
E-16**						7.02				6.61				7.55
E-17**						7.22				7.07				7.62
E-18**						6.62				7.37				5.23

Pred. = Normal predicted activity

LOO = Leave-one-out

LMO = Leave-many-out

BS = Bootstapping

* Predicted activity of test set compounds (test set-1)

** Predicted activity of experimentally in active or low active compounds

Table S4: Observed and predicted activity of test set (test set-2) compounds

Comp Code	Observed Activity	Predicted Activity		
		Model 1	Model 2	Model 3
F-1	7.72	7.22	6.99	6.99
F-2	6.30	6.71	7.09	7.04
F-3	7.79	7.52	7.87	7.96
F-4	7.01	7.21	7.57	7.51
F-5	8.52	7.98	7.72	7.69
F-6	7.54	7.71	8.05	7.24
F-7	6.36	6.8	5.89	6.42
F-8	6.65	6.62	6.38	7.01
F-9	8.19	8.41	7.82	8.31
F-10	7.66	7.01	7.04	7.08
F-11	7.87	7.81	7.16	7.65
F-12	6.42	7.24	7.14	7.01
F-13	6.21	6.37	6.86	6.04
F-14	8.27	8.69	7.86	8.61
F-15	6.19	6.78	7.04	7.06
F-16	5.73	6.55	6.09	6.61
F-17	5.72	6.6	6.33	6.46
F-18	8.39	8.4	7.89	7.9
F-19	7.41	8.06	7.88	6.96
F-20	8.46	8.59	8.57	8.08
F-21	7.54	7.78	7.71	6.95
F-22	7.71	8.56	8.13	7.97
F-23	8.54	8.65	8.6	8.46

F-24	6.62	6.82	6.82	7.16
F-25	7.95	7.84	7.95	8.61
F-26	7.32	7.66	7.47	6.59
F-27	7.15	7.67	7.61	7.39
F-28	7.44	7.19	6.86	7.1

Table S5: VIF and Durbin-Watson values of the selected models

Models	Descriptors	Tolerance	R-square	VIF	Durbin-Watson
Model 1	**E_oop**	0.986	0.014	1.014	2.357
	KierA2	0.923	0.077	1.084	
	DASA	0.910	0.089	1.098	
	SlogP_VSA0	0.993	0.007	1.007	
Model 2	**E_tor**	0.849	0.151	1.178	
	vsurf_Wp6	0.841	0.159	1.189	2.741
	std_dim2	0.940	0.060	1.064	
	vsurf_HL1	0.928	0.071	1.077	
Model 3	**KierFlex**	0.842	0.158	1.188	
	SlogP_VSA2	0.702	0.298	1.425	2.239
	lip_don	0.693	0.307	1.443	
	a_nCl	0.832	0.168	1.201	

Table S6: Results of virtual screening studies (pharmacophore and docking analysis)

Comp Code	Comp Code	Pharmacophores			Pharmacophore based docking				Normal docking			
		1	2	3	Without water		With water		Without water		With water	
		RMSD	RMSD	RMSD	Score	RMSD	Score	RMSD	Score	RMSD	Score	RMSD

A-1	**16-1**	0.959	1.222	-10.773	1.819					-10.251	1.679
A-2	**16-2**					-13.108	1.669	-11.709	1.329	-8.784	1.804
A-5	**16-5**		1.274			-10.952	2.138	-8.170	2.077	-7.641	1.405
A-6	**16-6**		1.244			-10.776	2.696	-8.220	2.038	-8.423	1.441
A-7	**16-7**		1.022			-10.997	1.651	-11.721	1.523	-12.123	1.428
A-8	**16-8**		0.899			-11.430	1.727	-11.205	1.704	-9.544	1.765
A-9	**16-9**			-9.319	2.016	-8.860	1.769	-6.563	1.487	-7.966	1.149
A-9	**16-9**					-10.122	1.973	-9.242	1.717	-11.326	1.651
B-1	**3-1**			-9.168	1.281					-8.729	1.396
B-2	**3-2**		1.445					-8.312	1.492	-7.002	1.128
B-3	**3-3**		0.607					-8.814	0.947	-9.046	1.030
B-4	**3-4**									-10.180	1.799
B-5	**3-5**	1.164						-10.961	1.469	-9.533	1.243
B-6	**3-6**							-10.572	1.397	-9.663	1.264
B-7	**3-7**							-9.491	0.848	-9.913	1.268
B-8	**3-8**	1.157				-7.921	1.590	-9.272	1.253	-12.229	1.444
B-9	**3-9**			-10.177	1.885					-8.302	1.423
B-10	**3-10**			-10.045	1.860					-10.204	1.681
B-11	**3-11**							-8.191	1.440	-8.066	1.237

B-14	**3-14**										-8.991	1.317
B-15	**3-15**		1.040									
C-1	**5-6**								-8.527	1.681	-8.111	1.403
C-2	**5-7**										-8.802	1.002
C-3	**5-8**										-9.864	1.324
C-4	**5-9**										-10.728	1.532
C-5	**5-10**										-8.924	1.108
D-1	**7-3**				-10.889	1.656	-12.060	1.584	-10.227	1.001	-9.712	0.995
D-1	**7-3**				-11.228	1.732	-12.307	1.800	-9.176	1.001	-8.521	0.920
D-2	**7-4**				-9.113	0.962			-10.615	1.222	-8.538	1.180
D-3	**7-5**		0.474	1.584	-8.742	1.071	-7.792	0.943	-8.458	0.923	-8.258	0.991
D-3	**7-5**				-9.454	1.375	-8.466	1.239	-9.280	1.280	-9.009	1.253
D-4	**7-6**	1.312	0.797		-8.568	1.232			-10.539	1.237	-8.724	1.094
D-5	**7-7**		0.972		-8.690	1.376	-9.903	1.698	-9.091	1.083	-8.882	0.797
D-6	**7-8**		1.214						-10.144	1.235	-8.725	1.113
D-7	**7-9**				-12.038	2.020	-8.579	1.697	-9.648	1.846	-8.706	1.406
D-9	**7-11**						-11.113	1.523	-10.856	1.627	-10.018	1.835
D-9	**7-11**								-8.537	0.885	-8.575	0.969
E-1	**9-10**		1.106						-11.298	1.475	-9.488	1.147
E-2	**9-11**		1.074				7.135	1.666	-9.990	1.226	-8.499	1.292
E-3	**9-12**			1.326			-9.341	1.600	-8.413	1.899	-9.045	1.713

E-4	**9-13**										-8.911	1.342
E-5	**9-14**										-9.503	1.607
E-6	**9-15**		0.807						-9.701	1.140	-9.035	0.751
E-7	**9-16**								-10.347	1.574	-9.242	1.452
E-8	**9-17**		0.928						-11.316	1.535	-9.438	1.080
E-9	**9-18**		0.670	0.771	-10.092	1.078	-12.230	1.002	-12.210	0.928	-9.971	1.160
E-10	**9-19**	1.076			-7.942	2.627	-11.690	2.435	-10.968	1.767	-9.100	1.415
E-11	**9-20**		0.819		-11.134	1.866	-12.553	1.607	-10.030	1.324	-10.86	1.725
E-12	**9-21**	0.900									-9.049	1.445
E-13	**9-22**								-9.637	1.842	-8.594	1.376
E-14	**9-23**								-10.571	1.631	-8.038	1.416
E-15	**9-24**	0.502					-8.339	1.988	-7.698	1.374	-9.087	1.799
E-16	**9-25**								-10.018	1.157	-9.181	0.978
E-17	**9-26**								-8.378	1.531	-8.609	1.455
E-18	**9-27**								-7.405	1.571	-8.092	1.283
F-1	**15-1**	0.951							-7.230	1.467	-8.461	1.488
F-2	**15-2**						-12.599	2.024	-10.525	2.207	-8.480	2.209
F-3	**15-3**	0.987			-10.728	1.725	-11.543	1.201	-9.605	1.579	-10.738	1.664
F-4	**15-4**	1.089										
F-5	**15-5**	1.315		0.674	-10.184	1.721	-12.380	1.628	-12.590	1.711	-10.336	1.603
F-7	**15-7**	0.810	1.354								-9.393	1.469

F-8	**15-8**		0.609	0.888					-10.591	1.667	-9.575	0.984
F-9	**15-9**								-12.715	1.747	-10.411	2.036
F-10	**15-10**	0.825	1.311						-9.038	1.253	-9.203	1.245
F-11	**15-11**				-9.845	2.031	-11.403	1.430	-12.442	1.426	-8.293	1.331
F-12	**15-12**								-12.089	1.843		
F-14	**15-14**								-11.943	1.629	-9.335	1.896
F-15	**15-15**								-8.057	1.127	-7.534	1.007
F-16	**15-16**	1.201		1.563			-10.403	1.733	-12.033	1.221	-9.178	1.532
F-17	**15-17**								-10.523	1.776	-8.202	1.827
F-19	**15-19**								-13.034	1.902	-8.890	1.991
F-20	**15-20**								-12.436	1.596	-8.152	2.052
F-21	**15-21**								-12.690	1.361	-8.306	1.392
F-24	**15-24**										-10.109	1.751
F-25	**15-25**		0.984	0.782	-10.225	1.040	-10.225	1.040	-10.312	1.146	-10.792	1.095
F-25	**15-25**						-10.317	1.463	-10.477	1.445	-11.458	1.139
F-27	**15-27**										-10.273	1.808
F-28	**15-28**		0.699						-10.011	1.052	-9.167	0.921
G-1	**17-10**[a]										-7.787	1.017

G-2	**17-10B**										-7.677	0.775
G-3	**17-10C**										-7.344	0.545
G-4	**17-13[a]**		0.642						-8.265	0.964	-9.338	0.968
G-5	**17-14[a]**	1.082	0.705		-10.312	1.361			-8.147	1.218	-10.342	0.963
G-6	**17-14B**		1.281		-9.636	1.191			-8.757	0.955	-10.133	1.036
G-7	**17-14C**		1.247		-8.396	0.921	-7.012	1.383	-8.690	1.348	-10.371	1.041
G-8	**17-14D**		0.976		-9.981	1.542			-9.673	1.182	-8.978	1.044
G-9	**17-14E**		0.945	1.380	-7.228	0.881			-9.542	1.112	-10.576	0.817
G-10	**17-16**		0.758	0.990	-10.109	0.965			-9.822	0.731	-10.817	0.611
G-11	**17-7B**										-9.851	1.420

Table S7: Results derived from the virtual screening (docking studies)

S. No	**Docking with water**			**Docking without water**		
	Comp code	**Score**	**RMSD**	**Comp Code**	**S**	**RMSD**
1	F-22	-12.419	3.720	F-4	-13.630	2.607
2	B-8	-12.229	1.444	F-20	-13.468	1.447
3	A-7	-12.137	2.089	F-22	-13.386	1.962
4	A-8	-12.027	2.250	F-12	-13.191	2.142
5	A-10	-12.009	2.164	F-21	-13.055	2.042
6	F-25	-11.975	1.738	F-19	-13.034	1.902
7	D-9	-11.968	2.901	F-14	-13.023	1.808
8	A-2	-11.853	3.556	F-1	-12.998	2.433
9	F-4	-11.824	3.591	F-26	-12.826	2.933
10	B-10	-11.620	2.747	A-2	-12.696	2.335

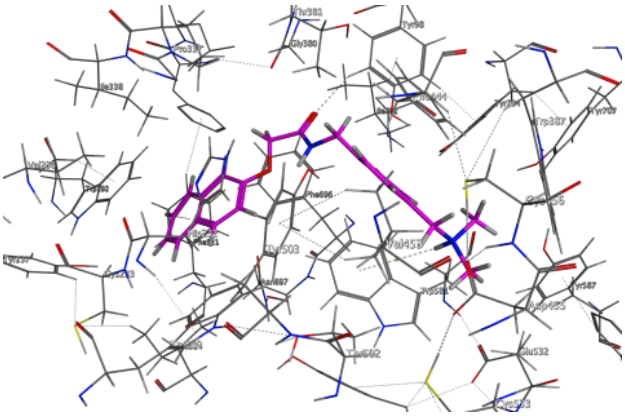
Table S8: Summary of the amino acid residues responsible for the interactions with the OSC inhibitors

Compound code	Pharmacophore based docking				Normal docking			
	With water		Without water		With water		Without water	
	Major	Minor	Major	Minor	Major	Minor	Major	Minor
D-3	Trp581, Asp455, Phe444	Phe696, Phe444, His232	Trp581, Asp455, Phe444	Phe696, Glu532, His232	Trp387	Phe696, Trp581, Asp455, Phe444, His232	Trp581, Phe444	Phe696, Glu532, Asp455, His232
E-9	Asp455	Phe696, Trp581, His232	Trp581, Asp455, Phe444, Trp387	Phe696, Tyr503, His232	Asp455, His232	Phe696, Trp581, Phe444	Trp581, Asp455, Phe444, Trp387	Phe696, Tyr503, His232
F-5	Phe696, Asp455	Trp581, Trp387, His232	Phe696, Asp455, Phe444	Trp581, Tyr503, His232	Phe696, Ile338	Trp581, Phe444, His232	Phe696, Asp455, Phe444	Trp581, His232
F-25	Asp455, Phe444,	Phe696, Trp581, Glu532, His232	Asp455, Phe444, Gly380	Phe696, Glu532, Trp581, His232	Trp581	Phe696, Asp456, Phe444, Ile338, His232	Asp455, Phe444	Phe696, Trp581, Glu532, His232
G-7	Asp455	Phe696, Trp581, Phe444, His232	Trp581, Asp455, His232	Phe696, Val453, Phe444	His232	Phe696, Trp581, Tyr503, Asp455, Phe444	His232	Phe696, Trp581, Asp455, Phe444
Nat-1	Ser339 (water bridge)	Asn697, Phe696, Trp581, Phe444, His232, Asp455	His232	Phe696, Trp581, Phe444, Asp455	Trp581	Phe696, Phe444, Ile338, His232	Asn697, His232, Tyr98	Phe696, Trp581, Asp455, Phe444
Nat-2	Asn697, Phe696, Trp581, Asp455, Trp387	Cys456, Phe444, Tyr98	--	--	Phe696, H_2O	Trp581, Asp455, Cys456, His232	Trp581	Asn697, Phe696, Asp455, His232, Tyr98
Nat-3	Cys456, Phe444, H_2O	Asn697, Phe696, Trp581, Asp455, Trp387, His232, Tyr98	Phe444	Asn697, Phe696, Cys456, Asp455, His232, Tyr98			Asp455	Asn697, Phe696, Trp581, Phe444, His232
Nat-4	Trp581, Asp455	Phe696, Phe444, Trp387, His232	Phe444, Asp455	Phe696, Trp581, Phe444, His232	Cys456, His232	Phe696, Trp581, Asp455, Phe444, His232	Cys456,	Asn697, Phe696, Trp581, Asp455, His232, Tyr98
Nat-5	Val695,	Phe696,	Cys456,	Phe696,	Cys456,	Phe696,	Cys456,	Asn697,

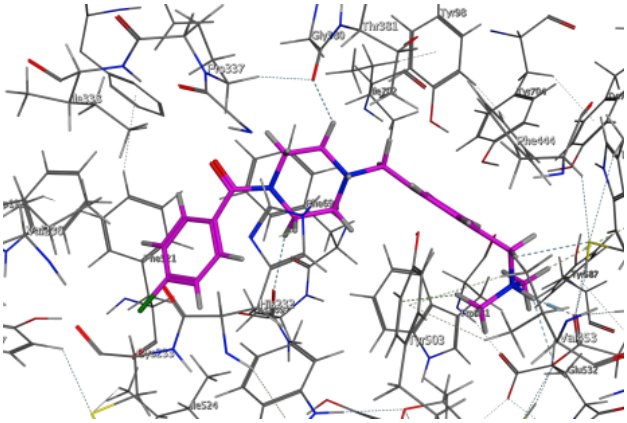
	Trp581	Trp581, Cys456, Phe444, Trp387, His232	Phe444	Trp581, Asp455, Phe444, His232	His232	Trp581, Asp455, Phe444, His232, Tyr98		Phe696, Trp581, Asp455, His232, Tyr98

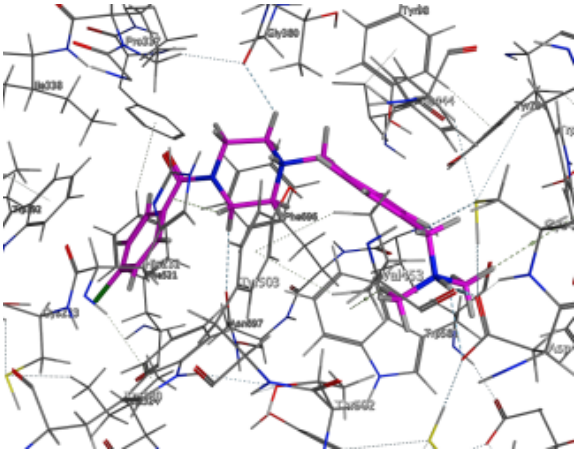
Figure S1: Graphical representation of docked compounds in the absence of water molecule by pharmacophore based and normal docking methods.

Pharmacophore based docking **Normal docking**

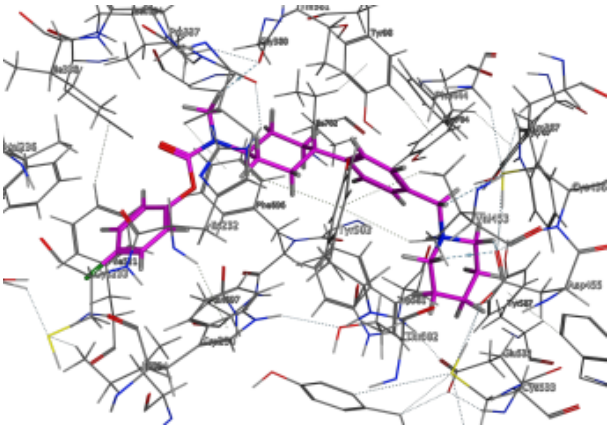


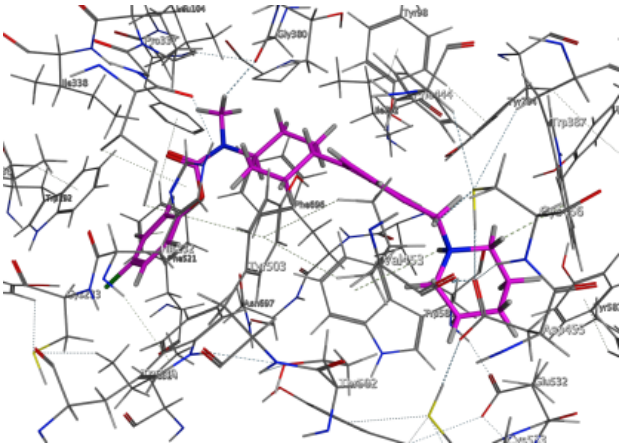
D-3





E-9

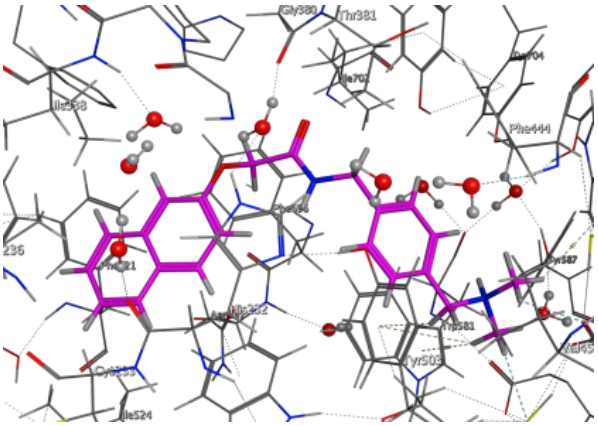




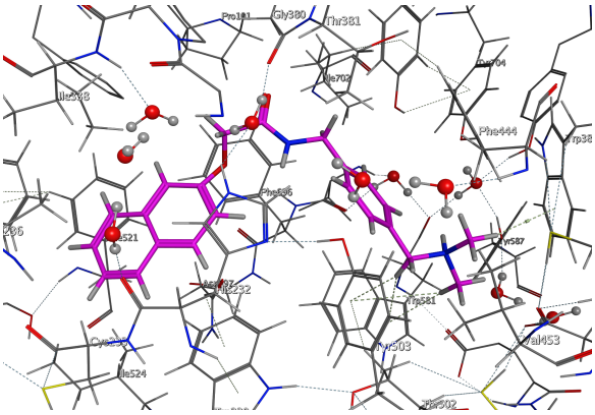
F-25

Figure S2: Graphical representation of docked compounds in the presence of water molecule by pharmacophore based and normal docking methods.

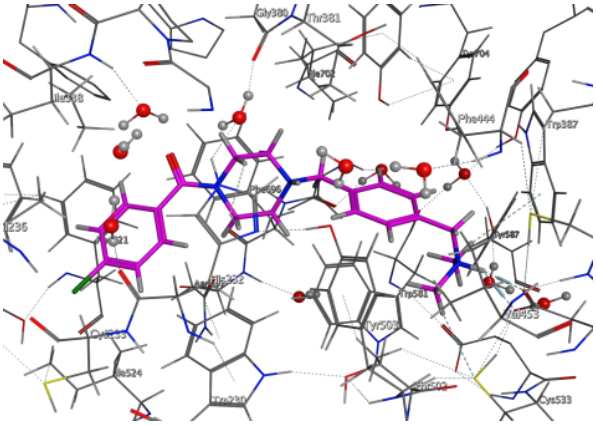
Pharmacophore **Normal**



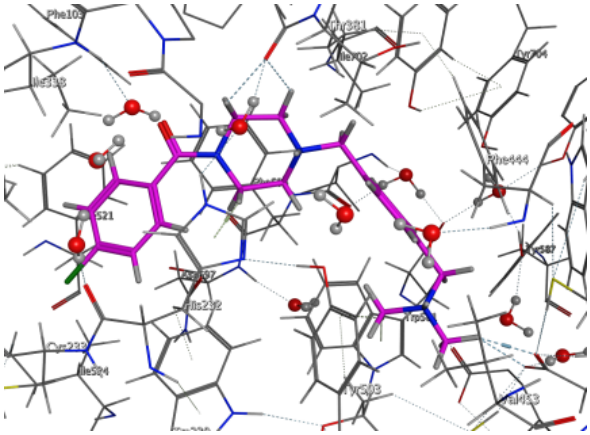
D-3



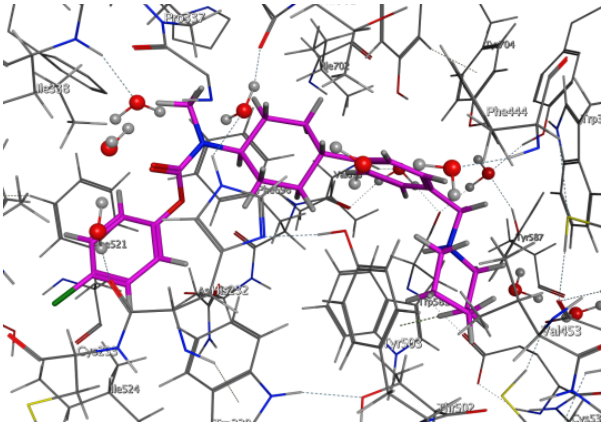
D-3



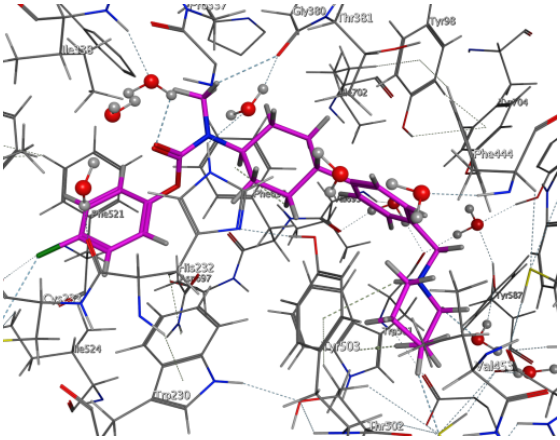
E-9



E-9

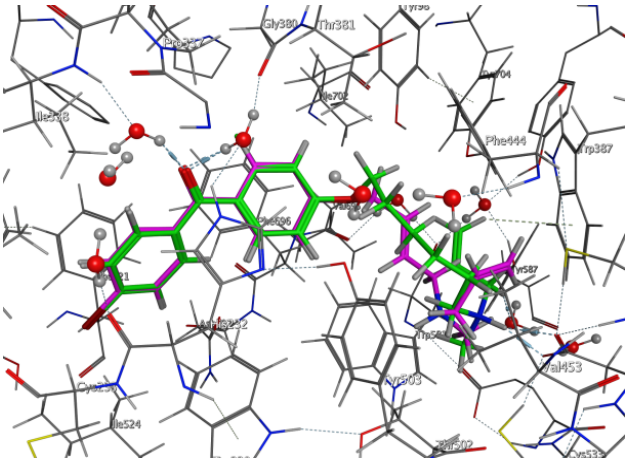


F-25

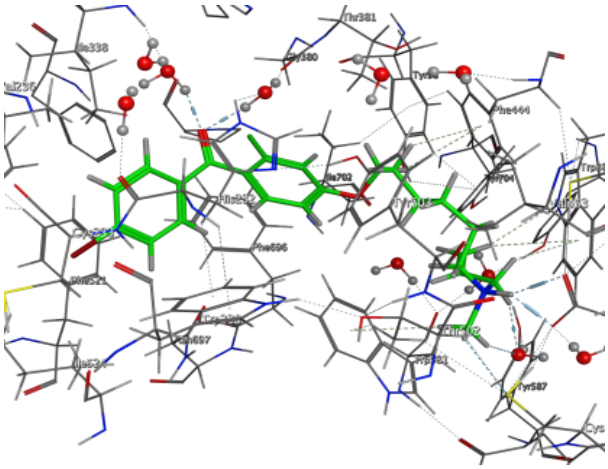


F-25

Figure S3: Binding mode of the reference compound and its structural analogue (compound F-5)



Superimposed structure (F-5) on reference compound (with water)

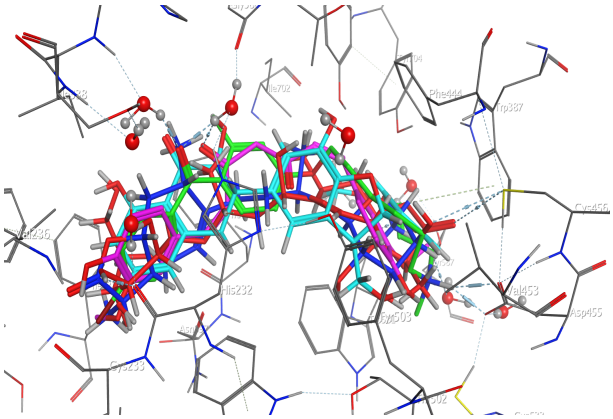


Binding mode of reference compound (with water)

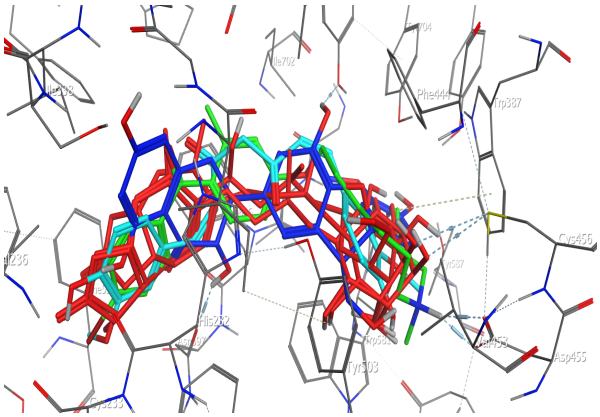
Superimposed structure (F-5) on reference compound (without water)

Binding mode of reference compound (without water)

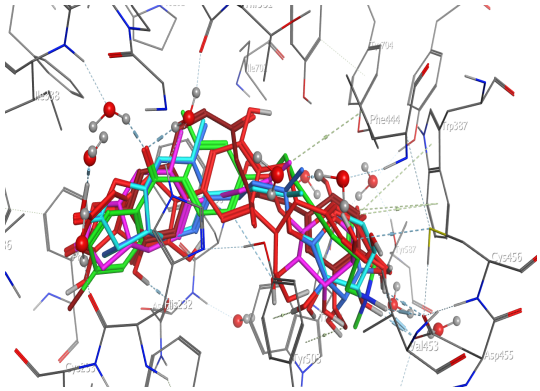
Figure S4: Superimposed structures of the natural product compounds (Nat-1 to Nat-5) on reference compound in the X-ray structure



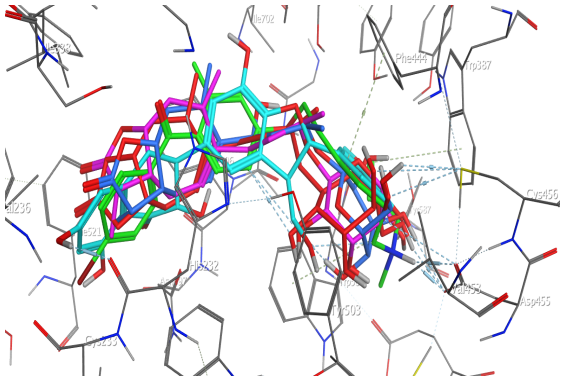
Docking with water



Docking without water



Pharmacophore with water



Pharmacophore without water