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Network pharmacology and molecular docking study of the active ingredients in Saptasaram kashayam for the treatment of polycystic ovary syndrome

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Supplementary Data

Suppl. Table 1 — List of selected drug like phytoconstituents of Saptasaram Kashayam and their Lipinski rule, %OB and DL

S. No	Phytoconstituents	Lipinski rule of five	%Oral Biavailability(OB)	Druglikeliness(DL)
1	Kevitone	Pass	77	1.38
2	Dalbergioidin	Pass	65	0.85
3	Genistein	Pass	76	0.44
4	L-ascorbic acid	Pass	44	0.74
5	nicotinic acid	Pass	68	0.3
6	Tyrosine	Pass	32	0.06
7	protocatechuic acid	Pass	52	0.23
8	tartaric acid	Pass	27	0.59
9	Xanthoarnol	Pass	83	0.29
10	Riboflavin	Pass	38	0.62
11	Quercetin	Pass	52	0.52
12	Kaempferol	Pass	64	0.5
13	Aegelin	Pass	100	0.29
14	Marmeline	Pass	100	0.49
15	Camphor	Pass	100	0.11
16	Gentisic acid	Pass	58	0.3
17	Catechin	Pass	60	0.64
18	Epicatechin	Pass	61	0.64
19	Luteolin	Pass	62	0.38
20	Ethyl brevifolincarboxylate	Pass	50	0.08
21	Diacetoxy-4-gingerdiol	Pass	100	0.13
22	4-Gingerdiol	Pass	90	0.07
23	8-Zingerine	Pass	93	0.24
24	6-Hydroxyflavone	Pass	94	0.48
25	2'-O-methylabronisoflavone	Pass	100	0.02
26	Boeravinone E	Pass	67	0.06
27	Boeravinone G	Pass	90	0.08
28	Boeravinone F	Pass	64	0.05
29	Coccineone E	Pass	100	0.25
30	Boeravinone C	Pass	86	0.19
31	Boeravinone A	Pass	94	0.34
32	Boeravinone B	Pass	80	0.25
33	Boeravinone D	Pass	80	0.34
34	Boeravinone I	Pass	82	0.27
35	Boeravinone J	Pass	79	0.34
36	Coccineone B	Pass	75	0.35
37	Boeravinone K	Pass	100	0.06
38	Boeravinone O	Pass	76	0.21
39	Boeravinone M	Pass	86	0.21
40	Assafoetidnol B	Pass	86	0.46

41	Ligupersin A	Pass	93	0.13
42	Assafoetidnol A	Pass	94	0.23
43	Microlobin	Pass	96	0.23
44	Kamolonol	Pass	94	0.13
45	Tetrahydropiperine	Pass	100	0.05
46	Piperlongumine	Pass	100	0.16
47	6-Gingerol	Pass	100	0.56

Suppl. Table 2 — Docking results of Estrogen receptor (ESR1) (PDBID: 1YLM) using Fulvestrant as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Fulvestrant	-11.083	GLU353, PHE404, HIE524	3
2	Boeravinone D	-10.228	LEU387, PHE404, GLU353, HIE524	5
3	Genistein	-10.178	PHE401, GLU353, LEU387, HIE524	5
4	kievitone	-9.583	THR347, PHE404, GLU353	3
5	Dalbergioidin	-9.545	PHE404, THR347	3
6	Coccineone B	-9.432	PHE404, GLU353	3
7	6-Hydroxyflavone	-9.341	PHE404, GLU353	2
8	2-O Methylarabinoisoflavone	-9.209	GLU353, PHE404, LEU387	4
9	Boeravinone C	-8.723	PHE404, GLU353	2
10	Boeravinone B	-8.227	PHE404, GLU353, LEU387	4-
11	Riboflavin	-8.178	THR347, ASP351	2
12	Boeravinone I	-8.127	PHE404, LEU345	3
13	Epicatechin	-8.098	ASP351	2
14	Boeravinone F	-8.025	THR347, ASP351	2
15	Marmeline	-7.891	ASP351	1
16	Boeravinone A	-7.799	HIE524	1
17	Assafoetidnol A	-7.799	HIE524	1
18	Luteolin	-7.733	ASP351	2
19	Kaempferol	-7.698	ASP351	1
20	Catechin	-7.698	THR347, ASP351	2
21	Xanthoarnol	-7.604	PHE404	5
22	Aegelin	-7.453	ASP351	1
23	Quercetin	-7.447	LYS531, ASP351, THR347	3
24	Boeravinone J	-7.313	ASP351	1
25	8-Zingerine	-7.22	LEU387	1
26	Tetrahydropiperine	-6.934	-	0
27	Boeravinone E	-6.91	LYS531, ASP351	2
28	Boeravinone O	-6.866	ASP351, LYS531, TYR526	3
29	Diacetoxy-4-gingerdiol	-6.841	LYS531	2
30	Boeravinone M	-6.646	LEU536, VAL534	3
31	Protocatechuic acid	-6.594	PHE404, GLU353, LEU387	6
32	Tyrosine	-6.577	GLU353, PHE404	2
33	Ligupersin A	-6.404	LYS531	1
34	Gentisic acid	-6.375	PHE404, GLU353	2
35	Camphor	-6.368	-	0
36	Boeravinone K	-6.304	ASP351	1
37	Boeravinone G	-5.951	LEU536	1
38	Ethyl brevifolincarboxylate	-5.742	ASP351	1
39	Piperlongumine	-5.621	LYS531	1
40	Nicotinic acid	-5.358	PHE404	1
41	Coccineone E	-5.352	TRP383	1
42	Ascorbic acid	-5.138	LEU346, GLU353	2
43	4-Gingerdiol	-4.589	THR347, ASP351	2
44	Tartaric acid	-4.118	LYS531, ASP351	5
45	6-Gingerol	-4.055	LEU346	1

46	Kamolonol	-	-	-
47	Assafoetidinol B	-	-	-
48	Microlobin	-	-	-

Suppl. Table 3 — Docking results of Estrogen receptor beta (ESR2) (PDBID:1QKM) using Estradiol as standard.

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Estradiol	-10.047	PHE356, HIP475, GLU305	3
2	Genistein	-10.363	PHE356, GLU305, ARG346, HIP475	3
3	Dalbergioidin	-10.158	PHE356, HIP475, GLU305	4
4	Catechin	-10.152	GLU305, ARG346, PHE356	4
5	Quercetin	-9.968	PHE356, ARG346, GLU305	4
6	Luteolin	-9.942	PHE356, ARG346, GLU305	4
7	Kaempferol	-9.547	PHE356, GLU305, ARG346	3
8	Epicatechin	-9.299	PHE356, GLU305, HIP475, LEU339	4
9	2-O Methylarabinoisoflavone	-9.15	PHE356, GLU305	2
10	Boeravinone F	-8.974	PHE346, GLU305, ARG346	4
11	Boeravinone J	-8.961	PHE356, ARG346, GLU305	4
12	Kievitone	-8.7	GLU305, LEU298, PHE356	3
13	Coccineone B	-8.481	GLU305, ARG346, PHE356	3
14	Tetrahydropiperine	-8.413	PHE356	2
15	Boeravinone E	-8.394	PHE356, GLU305	3
16	Boeravinone D	-8.27	PHE356, HIP475	2
17	6-Hydroxyflavone	-8.096	GLU305, PHE356	3
18	Xanthoarnol	-7.843	ARG346, PHE356, GLY472	4
19	Boeravinone B	-7.63	PHE356	2
20	Piperlongumine	-7.513	-	0
21	Aegelin	-7.455	GLU305	1
22	Protocatechuic acid	-7.181	PHE356, ARG346, GLU305	4
23	4-Gingerdiol	-6.856	GLY472, PHE356, GLU305, ARG346	4
24	Tyrosine	-6.674	ARG346, GLU305, PHE356	3
25	Camphor	-6.494	-	0
26	Nicotinic acid	-6.357	HIP475	1
27	Gentisic acid	-6.299	HIP475	1
28	Diacetoxy-4-gingerdiol	-5.639	HIP475, PHE356, GLU305, ARG346	4
29	6-Gingerol	-5.21	PHE356, HIP475, GLY472	3
30	Ascorbic acid	-5.136	GLU305, ARG346	3
31	Tartaric acid	-5.053	GLY472, HIP475	2
32	Ethyl brevifolincarboxylate	-4.511	-	0
33	Boeravinone A	-	-	-
34	Boeravinone C	-	-	-
35	Boeravinone G	-	-	-
36	Boeravinone I	-	-	-
37	Boeravinone K	-	-	-
38	Boeravinone M	-	-	-
39	Boeravinone O	-	-	-
40	Coccineone E	-	-	-
41	Marmeline	-	-	-
42	Riboflavin	-	-	-
43	8-Zingerine	-	-	-
44	Assafoetidinol A	-	-	-
45	Kamolonol	-	-	-
46	Assafoetidinol B	-	-	-
47	Ligupersin A	-	-	-
48	Microlobin	-	-	-

Suppl. 4 — Docking results of Phosphotidylinositol-3-kinase regulatory subunit alpha (PIK3R1) (PDBID: 4L2Y) using Isoproterenol as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Isoproterenol	-6.247	TYR836, ASP810	3
2	Riboflavin	-9.345	TYR836, ASP933, LYS802,	5
3	Luteolin	-9.148	ASP810, TYR836, VAL851, TRP780	3
4	Catechin	-9.057	VAL851, ASP810, TYR836	3
5	Quercetin	-8.759	VAL851, ASP810, TYR836, TRP780	5
6	Dalbergioidin	-8.661	VAL851, ASP933, LYS802, SER774	4
7	Genistein	-8.551	VAL851, ASP810, TYR836, ASP933	4
8	Kaempferol	-8.444	ASP810, TYR836	2
9	Boeravinone E	-8.234	VAL851, ASP933	2
10	Coccineone B	-8.208	-	0
11	6-Hydroxyflavone	-8.051	-	0
12	Xanthoarnol	-8.049	TYR836, VAL851, ASP933	3
13	Boeravinone J	-8.036	VAL851, TYR836, ASP810	4
14	Boeravinone F	-7.972	VAL851, GLU849, TYR836, ASP933	4
15	Boeravinone B	-7.55	ASP933	1
16	Boeravinone D	-7.356	VAL851, ASP933, LYS802	3
17	2-O-Methylarabinoisoflavone	-7.055	TYR836, ASP810	2
18	Boeravinone G	-6.973	TYR836, ASP810	2
19	Ethyl brevifolincarboxylate	-6.912	TYR836	2
20	Epicatechin	-6.872	ASP810, TYR836	2
21	Boeravinone O	-6.814	ASP933, TYR836, ASP810	3
22	Piperlongumine	-6.741	VAL851	1
23	Protocatechuic acid	-6.638	VAL851, GLU849, TYR836	4
24	Boeravinone I	-6.604	TRP780, ASP933	2
25	Boeravinone M	-6.599	TRP780, ASP933	2
26	Marmeline	-6.518	SER774, LYS802	2
27	Diacetoxy-4-gingerdiol	-6.511	VAL851, ASP933, TYR836	3
28	Ligupersin	-6.223	VAL851, TYR836	2
29	Aegelin	-6.178	TYR836, ASP933	3
30	Gentisic acid	-6.155	GLU849, VAL851, TYR836	4
31	Boeravinone K	-5.912	ASP810	1
32	Microlobin	-5.824	TRP780, TYR836	2
33	Tetrahydropiperine	-5.804	VAL851, TYR836,	2
34	Kievitone	-5.769	SER774, ASN920	1
35	Nicotinic acid	-5.551	TYR836, VAL851	2
36	Boeravinone C	-5.382	SER773	1
37	4-Gingerdiol	-5.304	ASP810, TYR836	2
38	Assafoetidnol A	-5.106	SER773	1
39	Boeravinone A	-5.106	SER773	1
40	8-Zingerine	-5.023	HIE855	1
41	Tyrosine	-4.829	ASP933, LYS802	2
42	Coccineone E	-4.386	-	0
43	Ascorbic acid	-4.298	VAL851	1
44	Tartaric acid	-4.008	GLU849, VAL851	2
45	6-Gingerol	-3.227	TYR836, ASP810,	2
46	Kamolonol	-	-	-
47	Assafoetidinol B	-	-	-
48	camphor	-	-	-

Suppl. Table 5 — Docking results of Signal transducer and activator of transcription-3 (STAT3) (PDBID: 6SM8) using Napabucasin as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Napabucasin	-7.284	PHE886	1
2	Kievitone	-10.388	ASP1003, GLU883	4
3	Catechin	-8.887	GLU957, LEU959	3
4	Gentisic acid	-8.569	GLU957, LEU959	6
5	Quercetin	-8.243	LEU959, GLU908	4
6	Epicatechin	-8.043	LYS908, GLU957	3
7	Kaempferol	-7.994	GLU957, LEU959, LYS908	5
8	Dalbergioidin	-7.867	ASN1008, GLU957	2
9	Boeravinone F	-7.741	ASN1008, LYS908	4
10	Coccineone B	-7.576	ARG1007, ASP1003, LYS908	3
11	Boeravinone J	-7.417	ASN1008, LYS908	4
12	Luteolin	-7.392	ASP1003, LYS908	2
13	Boeravinone O	-7.366	ARG1007, ASN1008, GLY884	4
14	Protocatechuic acid	-7.231	ASP1021, LEU959	4
15	Boeravinone I	-7.089	ASN1008, PHE886, ASP1021	5
16	Boeravinone E	-7.019	ARG1007	2
17	Piperlongumine	-6.975	-	0
18	Coccineone E	-6.963	ASN1008, LYS908	3
19	Aegelin	-6.96	LYS908, LEU881	3
20	Genistein	-6.842	PHE886	2
21	Boeravinone K	-6.762	GLU83	1
22	Tetrahydropiperine	-6.718	PHE886	1
23	2-O Methylarabinoisoflavone	-6.674	ASN1008, LEU881, ARG1007	4
24	Boeravinone B	-6.664	ARG1007	1
25	Boeravinone D	-6.622	GLY884, ASN1008, ASP1003	5
26	Nicotinic acid	-6.603	LEU959	2
27	8-Zingerine	-6.528	GLU966	1
28	Tyrosine	-6.508	LEU959, GLU957	3
29	Marmeline	-6.339	ASN1008, PHE886	3
30	Xanthoarnol	-6.306	ARG1007	1
31	4-Gingerdiol	-6.238	ASN1008, GLU957, LEU959	4
32	Boeravinone G	-6.222	-	1
33	6-Hydroxyflavone	-6.211	-	0
34	Boeravinone M	-6.205	PHE886, LYS908, ASP1023, ASN1008	5
35	Ethyl brevifolincarboxylate	-6.186	ASP1003	2
36	Boeravinone C	-6.127	LYS908	2
37	Camphor	-5.596	-	0
38	Ascorbic acid	-5.474	-	2
39	6-Gingerol	-5.464	ARG1007	1
40	Tartaric acid	-5.161	LEU959	3
41	Diacetoxy-4-gingerdiol	-4.333		3
42	Microlobin	-2.371	-	1
43	Assafoetidinol A	-	-	-
44	Kamolonol	-	-	-
45	Assafoetidinol B	-	-	-
46	Ligupersin A	-	-	-
47	Boeravinone A	-	-	-
48	Riboflavin	-	-	-

Suppl. Table 6 — Docking results of 3-Phosphotidylinositol dependent protein kinase-1 (PDPK1) (PDBID: 3NAX) using GSK2334470 as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	GSK2334470	-7.888	SER160, PHE224	2
2	Kievitone	-9.236	LYS111, MET134	4
3	Luteolin	-8.681	PHE224, SER160, LYS111, GLY91	7
4	Diacetoxy-4-gingerdiol	-8.323	LEU88, LYS111	3
5	8-Zingerine	-7.904	GLY91	1
6	Xanthoarnol	-7.874	HIE203, PHE142, VAL143	4
7	Boeravinone K	-7.845	PHE224, ASP223, LYS111	4
8	Riboflavin	-7.738	PHE224, ASP223, MET134, VAL143	4
9	Gentisic acid	-7.736	SER160, ALA162, LEU88	5
10	Boeravinone D	-7.583	SER160, GLY91	2
11	Catechin	-7.555	LYS111, MET134, ASP223, GLY91	6
12	Tetrahydropiperine	-7.548	-	0
13	Aegelin	-7.493	MET134	1
14	Epicatechin	-7.411	GLY91, MET134, ILE221	4
15	6-Hydroxyflavone	-7.398	GLY91	1
16	Genistein	-7.337	LYS111, SER94, PRO125, GLY91M MET134	7
17	Marmeline	-7.314	LYS111	1
18	Protocatechuic acid	-7.112	ALA162	3
19	Coccineone B	-7.107	SER160	1
20	Ethyl brevifolincarboxylate	-7.106	ASP223, LYS111, MET134	6
21	Dalbergioidin	-7.009	ASP223, PHE224, LYS111, GLY91	4
22	Nicotinic acid	-6.955	ALA162	3
23	Kaempferol	-6.905	GLY91, ASP223, ILE221, MET134, LYS111	7
24	Boeravinone J	-6.868	SER160, PHE224	4
25	Piperlongumine	-6.818	-	0
26	Quercetin	-6.7	ASP223, LYS111, MET134	5
27	2-O- Methylarabinoisoflavone	-6.643	LYS111	1
28	Tyrosine	-6.606	PHE142, ASP223, LYS111, TYR126, MET134	5
29	Boeravinone M	-6.02	LYS111	1
30	Boeravinone O	-5.894	LYS111	1
31	Boeravinone G	-5.667	-	0
32	4-Gingerdiol	-5.648	ASP223, TYR126	2
33	Tartaric acid	-5.353	SER160, SER160, LEU88	6
34	6-Gingerol	-5.252	ASP223, LYS111, PHE142	3
35	Boeravinone F	-5.185	SER160, PHE224, LYS111, GLY91	6
36	Ascorbic acid	-5.135	VAL143, MET134, LYS111	5
37	Assafoetidinol A	-	-	-
38	Kamolonol	-	-	-
39	Assafoetidinol B	-	-	-
40	Ligupersin A	-	-	-
41	Microlobin	-	-	-
42	Boeravinone A	-	-	-
43	Boeravinone B	-	-	-
44	Boeravinone C	-	-	-
45	Boeravinone E	-	-	-
46	Boeravinone I	-	-	-
47	Coccineone E	-	-	-
48	Camphor	-	-	-

Suppl. Table 7 — Docking results of Prothrombin (F2) (PDBID: 3DA9) using Dabigatran as standard.

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Dabigatran	-4.231	ARG208, GLU130	6
2	Quercetin	-6.797	GLY258, HIP79, TYR83, GLU130	6
3	Dalbergioidin	-6.451	GLY258, GLU130	3
4	Kaempferol	-6.397	HIP79, GLY258, TYR83	5
5	Nicotinic acid	-6.307	HIP79, TYR83, GLY258	6
6	luteolin	-6.222	HIP79, TYR83, GLU130, GLY258	6
7	Catechin	-6.209	GLY258, GLU130	3
8	Tyrosine	-6.058	GLY258,	4
9	Protocatechuic acid	-5.858	HIP79, TYR83	5
10	Epicatechin	-5.856	GLY258, GLU130	3
11	Gentisic acid	-5.82	HIP79	3
12	Piperlongumine	-5.783	GLY258	4
13	Genistein	-5.536	GLY258, HIP79, TYR83	5
14	6-Hydroxyflavone	-5.403	HIP79, TYR83, GLY258	4
15	Tartaric acid	-5.287	HIP79, GLY258	5
16	Tetrahydropiperine	-5.059	GLY258	2
17	Diacetoxy-4-gingerdiol	-5.02	GLU259	3
18	Ethyl brevifolincarboxylate	-4.969	-	1
19	Boeravinone D	-4.829	GLY258, TYR83, HIP79	5
20	Boeravinone B	-4.825	GLY258, TYR83	3
21	Camphor	-4.817	TYR83	1
22	Marmeline	-4.752	-	2
23	Coccineone B	-4.639	TYR83, HIP79	4
24	Boeravinone O	-4.565	GLY258, HIP79, TYR83	4
25	Boeravinone M	-4.528	HIP79, TYR83	3
26	Boeravinone G	-4.527	GLY258, HIP79, TYR83	4
27	Kievitone	-4.526	GLY258	3
28	Xanthoarnol	-4.507	HIP79, TYR83, GLY258	3
29	Boeravinone F	-4.35	TYR83, GLY258	3
30	Boeravinone K	-4.331	GLY258	2
31	Boeravinone C	-4.319	-	0
32	2-O Methylarabinoisoflavone	-4.299	HIP79, TYR83	3
33	Boeravinone J	-4.298	GLY258	2
34	Boeravinone E	-4.274	TYR83, GLY258, SER256	3
35	Ascorbic acid	-4.216	GLY258	3
36	Ligupersin A	-3.913	HIP79	2
37	Aegelin	-3.86	TYR83, HIP79, GLY258	3
38	Riboflavin	-3.807	GLY258	2
39	Boeravinone A	-3.775	HIP79	2
40	Assafoetidnol A	-3.775	HIP79	2
41	Boeravinone I	-3.76	GLU232, TRP86	2
42	8-Zingerine	-3.654	HIP79	1
43	Microlobin	-3.607	HIP79	3
44	Coccineone E	-3.556	GLY258, HIP79	0
45	4-gingerdiol	-3.509	GLY258, TYR83, HIP79	3
46	6-gingerol	-2.278	GLY258	2
47	Kamolonol	-	-	-
48	Assafoetidinol B	-	-	-

Suppl. Table 8 — Docking results of Androgen Receptor (AR) (PDBID: 2AMA) using Flutamide as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Flutamide	-6.883	ARG752	1
2	Coccineone B	-10.252	PHE764, LEU704, ASN705	3
3	Boeravinone J	-10.137	ASN705, THR877, ARG752	3
4	Boeravinone B	-10.121	PHE764, ASN705, THR877	3
5	2-O Methylarabinoisoflavone	-9.886	THR877, ASN705	2
6	Boeravinone E	-9.672	ARG752, ASN705	2
7	Boeravinone G	-9.628	PHE764, THR877, ASN705	3
8	Epicatechin	-9.441	PHE764, MET745, THR877, ASN705	4
9	Boeravinone F	-9.296	ASN705	1
10	Catechin	-9.277	ASN705	1
11	Genistein	-9.271	PHE764, ASN705	2
12	Boeravinone D	-9.225	PHE764, ASN705	2
13	Xanthoarnol	-9.175	ARG752, PHE764, ASN705, THR877	4
14	Dalbergioidin	-9.149	PHE764, ASN705	2
15	Boeravinone O	-9.006	PHE764, ASN705, THR877	3
16	Kaempferol	-8.887	PHE764, ASN705, THR877	3
17	Luteolin	-8.587	PHE764, THR877, ASN705	3
18	Boeravinone I	-8.521	PHE764, LEU704, ASN705	3
19	Quercetin	-8.43	PHE764, ASN705, THR877	3
20	Boeravinone M	-8.379	ASN705	1
21	6-Hydroxyflavone	-8.351	-	0
22	Boeravinone C	-7.96	LEU704, ASN705	2
23	Tetrahydropiperine	-7.898	-	0
24	Piperlongumine	-7.515	PHE764	1
25	Camphor	-7.22	-	0
26	Coccineone E	-7.056	-	0
27	Diacetoxy-4-gingerdiol	-6.737	THR877	1
28	4-gingerdiol	-6.728	ASN705, THR877	2
29	Nicotinic acid	-6.694	THR877, ASN705	2
30	Gentisic acid	-6.651	ASN705	1
31	Tyrosine	-6.533	ASN705, THR877	2
32	Protocatechuic acid	-6.521	ASN705, THR877	3
33	Aegelin	-5.149	PHE764	1
34	Ascorbic acid	-4.974	ASN705	2
35	6-Gingerol	-4.59	ASN705	1
36	Tartaric acid	-4.385	ASN705, THR877	3
37	Boeravinone A	-	-	-
38	Boeravinone K	-	-	-
39	Marmeline	-	-	-
40	Riboflavin	-	-	-
41	Kievitone	-	-	-
42	Ethyl brevifolincarboxylate	-	-	-
43	8-Zingerine	-	-	-
44	Assafoetidinol A	-	-	-
45	Kamolonol	-	-	-
46	Assafoetidinol B	-	-	-
47	Ligupersin A	-	-	-
48	Microlobin	-	-	-

Suppl. Table 9 — Docking results of RAC-alpha Serine/threonine protein kinase (AKT1) (PDBID:4GV1) using Afuresertib as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Afuresertib	-6.124	-	1
2	Nicotinic acid	-7.655	ASP292, ALA230	4
3	Coccineone B	-7.591	GLU234, ALA230, GLU228, MET281, LEU156	6
4	Catechin	-7.431	GLU234, GLU228, ALA230	3
5	Gentisic acid	-7.107	ALA230, GLU228	2
6	Boeravinone J	-7.084	GLU228, ALA230, LEU156, GLU234	5
7	Xanthoarnol	-6.724	GLU234, ASP292, ALA230, LEU156	5
8	Quercetin	-6.568	GLU234, GLU228, LEU156	4
9	Epicatechin	-6.567	GLU228, ALA230	2
10	Genistein	-6.543	GLU228, ALA230	3
11	Aegelin	-6.52	GLU234, ASP292, PHE161, ASN279	9
12	Dalbergioidin	-6.462	ASP292, GLU278	5
13	2-O Methylarabinoisoflavone	-6.444	-	0
14	Kaempferol	-6.382	GLU228, ALA230	2
15	Luteolin	-6.363	GLU228, ALA230	3
16	Tetrahydropiperine	-6.275	ALA230	1
17	Ligupersin A	-6.273	LYS179, ASP292,	3
18	6-Hydroxyflavone	-6.099	GLU228	1
19	Boeravinone E	-6.079	GLU234, GLU278, LYS276, ASP292	5
20	Tyrosine	-6.069	ASP292, ASN279, GLU228, GLU234	5
21	Protocatechuic acid	-6.062	GLU228, ALA230	2
22	Boeravinone B	-6.042	ASN279, GLU278, LYS276	5
23	Boeravinone D	-5.585	GLU234, LEU156, GLU278	5
24	Diacetoxy-4-gingerdiol	-5.49	ALA230, GLU228	2
25	Boeravinone F	-5.476	GLU278, LYS276	3
26	Coccineone E	-5.449	ASP292	3
27	Boeravinone C	-5.355	GLU234, LEU156	3
28	8-Zingerine	-5.337	ALA230, GLU228, GLU234, LEU156	5
29	Tartaric acid	-5.308	GLU278, LYS276, GLU234, ASP292, ASN279	8
30	Boeravinone O	-5.265	LEU156, GLU234, LYS276	7
31	Piperlongumine	-4.992	LYS158	1
32	Boeravinone G	-4.927	ASP292, LEU156, GLU234, LYS276, GLU278	8
33	Ethyl brevifolincarboxylate	-4.832	ASP292	2
34	Boeravinone I	-4.782	GLU234, LEU156	3
35	4-Gingerdiol	-4.503	ASP292	3
36	6-Gingerol	-4.289	ALA230, GLU228	2
37	Ascorbic acid	-4.279	ASP292, LYS158	6
38	Boeravinone M	-4.188	ALA230	1
39	Marmeline	-3.946	GLU234, PHE442	2
40	Kievitone	-3.938	GLU234, GLU228	2
41	Camphor	-3.919	-	0
42	Riboflavin	-3.85	GLU234, GLU278, LYS276, ASP292	9
43	Boeravinone K	-3.713	GLU234	1
44	Boeravinone A	-	-	-
45	Microlobin	-	-	-
46	Assafoetidinol A	-	-	-
47	Kamolonol	-	-	-
48	Assafoetidinol B	-	-	-

Suppl. Table 10 — Docking results of Mitogen activated protein kinase 3 (MAPK3) (PDBID:4QTB) using Ulixertinib as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Ulixertinib	-5.647	TYR81, ALA52	2
2	Catechin	-8.673	LYS131, ASP128, GLU88, GLN122, ASP184, TYR53	8
3	Quercetin	-7.979	LYS131, MET125, TYR53, GLU88, ASP184, GLN122	7
4	Ligupersin A	-7.978	LYS71, ASP121, LYS131, LYS71, TYR53	7
5	Aegelin	-7.752	GLN122, GLU88, ASP184	4
6	Luteolin	-7.584	TYR53, ASP121, MET125	3
7	Marmeline	-7.571	TYR53, LYS71, ASP184	3
8	Epicatechin	-7.45	TYR53, MET125	2
9	Tyrosine	-7.413	ASP184, GLU88, LYS71	6
10	Kaempferol	-7.31	MET125, LYS131, ASP128, LYS71	4
11	Dalbergioidin	-6.919	ARG84, ASP184	3
12	2-O Methylarabinoisoflavone	-6.891	THR85, TYR81	3
13	Tetrahydropiperine	-6.839	ARG84, LYS71	2
14	Coccineone B	-6.824	ASP184, ARG84	3
15	Genistein	-6.79	ASP184, LYS71, ASP123, MET125, TYR53	5
16	Boeravinone B	-6.782	TYR81, ARG84	3
17	Gentisic acid	-6.714	ARG84	6
18	Protocatechuic acid	-6.57	ARG84	3
19	6-Hdroxyflavone	-6.506	MET125, TYR53	2
20	kievitone	-6.273	ALA52	2
21	Boeravinone F	-6.258	ARG84, LYS71, ASP184	5
22	6-Gingerol	-6.096	LYS71, GLN122, MET125	4
23	Boeravinone I	-6.04	TYR81, ARG84	7
24	Nicotinic acid	-5.683	ARG84	3
25	Boeravinone K	-5.603	LYS71, TYR53, GLN122, ASP123	4
26	Ascorbic acid	-5.508	ALA52	2
27	Boeravinone J	-5.319	TYR53, ASP123	3
28	Xanthoarnol	-5.281	LYS71, MET125	2
29	8-Zingerine	-5.232	-	1
30	Boeravinone G	-5.076	-	0
31	4-Gingerdiol	-4.855	GLN122, ASP123, ASP184, GLU88, MET125	6
32	Camphor	-4.791	ASP184	2
33	Tartaric acid	-4.647	LYS71, GLN122	3
34	Boeravinone E	-4.272	LYS71, ARG84, ASP184, TYR81	5
35	Piperlongumine	-4.167	GLN122, LYS71	2
36	Boeravinone O	-4.047	TYR53, LYS71, GLN122	4
37	Boeravinone D	-3.859	GLN122, LYS71, TYR53	4
38	Microlobin	-3.011	TYR81, ARG84	5
39	Diacetoxy-4-gingerdiol	-0.165	LYS71	1
40	Boeravinone C	-	-	-
41	Assafoetidinol A	-	-	-
42	Kamolonol	-	-	-
43	Assafoetidinol B	-	-	-
44	Ligupersin A	-	-	-
45	Boeravinone M	-	-	-
46	Coccineone E	-	-	-
47	Riboflavin	-	-	-
48	Boeravinone A	-		-

Suppl. Table 11 — Docking results of Phosphatidylinositol 4,5-bisphosphate-3-kinase catalytic subunit alpha isoform (PIK3CA) (PDBID:5DXT) using Alpelisib as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Alpelisib	-6.844	ARG770, SER854, ASN853	4
2	Luteolin	-9.263	VAL851, LYS 802, ASP933, TYR836, TRP780	7
3	Catechin	-9.106	LYS802, TRP780, VAL851	4
4	Coccineone B	-9.043	TYR836, TRP780, VAL851	4
5	Kaempferol	-8.902	ASP933, LYS802, VAL851	5
6	Boeravinone M	-8.737	TRP780, VAL851, GLU849, TYR 836	5
7	Quercetin	-8.719	ASP933, LYS802, VAL851, TRP780	5
8	Riboflavin	-8.516	SER854, VAL851	5
9	Genistein	-8.49	LYS802, VAL851	2
10	Boeravinone D	-8.473	LYS802, ASP933, TRP780	3
11	6-Hydroxyflavone	-8.274	SER774, LYS802	2
12	Boeravinone F	-8.256	TYR836, GLU849, AL851	4
13	Boeravinone O	-8.237	TRP780, SER854, VAL851, TYR836, GLU849	7
14	Xanthoarnol	-8.105	LYS802, VAL851, TYR836	5
15	Boeravinone J	-8.025	VAL851, GLU849	2
16	Dalbergioidin	-7.882	ASP933, TYR836	2
17	Boeravinone G	-7.863	TYR836, SER774	3
18	Boeravinone B	-7.853	TYR836	2
19	Boeravinone I	-7.818	TRP780, TYR836	3
20	2-O Methylarabinoisoflavone	-7.601	VAL851	1
21	Ethyl brevifolincarboxylate	-7.331	TYR836, VAL851	3
22	protocatechuic acid	-7.032	TYR836, GLU849, VAL851	5
23	Boeravinone E	-6.993	ARG770, VAL851	2
24	Kievitone	-6.944	SER919, LYS802, ASP933, TYR836	6
25	Epicatechin	-6.921	ASP933, VAL851	3
26	Tetrahydropiperine	-6.892	SER919, VAL851, TYR836, THR856	5
27	Marmeline	-6.762	VAL851, GLU849, TYR836	5
28	Tyrosine	-6.525	LYS802, SER774, GLI849, VAL851, TYR836	5
29	Piperlongumine	-6.426	GLN859, SER773	3
30	Gentisic acid	-6.365	TYR836, ASP933, LYS802, SER774	5
31	Coccineone E	-6.23	VAL851, SER854	4
32	Boeravinone K	-6.11	GLN859	1
33	Aegelin	-6.07	LYS802, TYR836, ASP933	4
34	Nicotinic acid	-6.02	SER774, LYS802, TYR836, ASP933	5
35	8-Zingerine	-5.68	ASP933, LYS802, SER919, ARG770	5
36	Diacetoxy-4-gingerdiol	-5.363	LYS802	1
37	Ligupersin A	-5.229	GLU849, ARG770	2
38	Ascorbic acid	-5.043	GLU849, VAL851	2
39	4-Gingerdiol	-4.988	LYS802, VAL851, GLU849	5
40	6-Gingerol	-4.923	ASP933, LYS802	2
41	Boeravinone C	-4.494	SER919, SER773	2
42	Tartaric acid	-4.476	LYS802, SER774	3
43	Boeravinone A	-3.688	TYR836	2
44	Assafoetidnol A	-3.688	TYR836	2
45	Microlobin	-3.576	TYR836	1
46	Kamolonol	-	-	-
47	Assafoetidinol B	-	-	-
48	Camphor	-	-	-

Suppl. Table 12 — Docking results of Mitogen activated protein kinase 1 (MAPK1) (PDBID: 4ZZN) using Ravoxertinib as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Ravoxertinib	-4.422	THR108	2
2	Luteolin	-8.593	GLN103, MET106	4
3	6-Hdroxyflavone	-7.789	MET106	1
4	Boeravinone J	-7.525	MET106, ASP104, GLN103	4
5	Genistein	-7.472	MET106, GLN103	2
6	Aegelin	-6.98	MET106	1
7	Catechin	-6.96	THR108, GLU107, MET106	4
8	Kaempferol	-6.958	MET106, GLU107, THR108	5
9	Piperlongumine	-6.919	-	0
10	Protocatechuic acid	-6.894	ASP104, LYS52, GLN103	6
11	Boeravinone M	-6.851	GLN103, MET106, ASP109	5
12	Kievitone	-6.838	SER151, ASN152, LYS52, GLN103, ASP104, MET106	8
13	Epicatechin	-6.809	GLN103	2
14	Boeravinone O	-6.781	GLN103, MET106	3
15	Tyrosine	-6.684	MET106, ASP104, GLN103, LYS52	6
16	Coccineone B	-6.63	ASP109	3
17	Quercetin	-6.6	MET106, GLU107, THR106	5
18	2-O Methylarabinoisoflavone	-6.536	THR108, GLU107	3
19	Dalbergioidin	-6.514	GLN102, MET106, ASP104	3
20	Marmeline	-6.22	-	0
21	Diacetoxy-4-gingerdiol	-6.151	LYS52, GLN103	4
22	Ethyl brevifolincarboxylate	-6.116	LYS52	4
23	Gentisic acid	-5.932	ASP104, GLN103, LYS52	5
24	Tetrahydropiperine	-5.784	LYS52	3
25	Boeravinone K	-5.695	LYS52, GLN103	3
26	Xanthoarnol	-5.683	ASP109	2
27	Nicotinic acid	-5.676	LYS52	4
28	Boeravinone G	-5.278	GLN103, MET106	3
29	Boeravinone B	-5.143	MET106	1
30	Tartaric acid	-4.537	LYS52	4
31	Riboflavin	-4.504	-	0
32	Ascorbic acid	-4.42	ASP109, MET106	4
33	6-Gingerol	-3.308	MET106	1
34	4-Gingerdiol	-2.902	MET106	2
35	Assafoetidinol A	-	-	-
36	Kamolonol	-	-	-
37	Assafoetidinol B	-	-	-
38	Ligupersin A	-	-	-
39	Microlobin	-	-	-
40	Boeravinone A	-	-	-
41	Boeravinone C	-	-	-
42	Boeravinone D	-	-	-
43	Boeravinone E	-	-	-
44	Boeravinone F	-	-	-
45	Coccineone E	-	-	-
46	Camphor	-	-	-
47	8-Zingerine	-	-	-
48	Boeravinone I	-		-

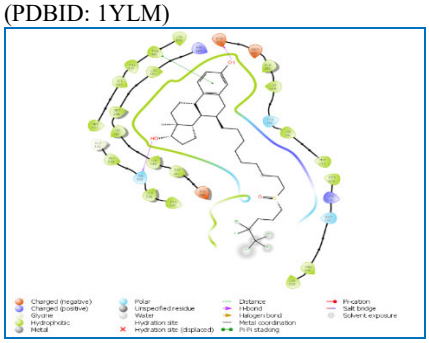
Suppl. Table 13 — Docking results of CREB-Binding Protein (CREBBP) (PDBID: 4TQN) using Inobrobid as standard.

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Inobrobid	-5.345	ASN1168, TYR1125	3
2	Gentisic acid	-7.853	ASN1168, PRO1110, TYR1125	6
3	Boeravinone F	-7.499	ASN1168, TYR1125, PRO1110	5
4	Boeravinone E	-6.958	PRO1110, TYR1125	3
5	Protocatechuic acid	-6.943	ASN1168, TYR1125, PRO1110	5
6	Luteolin	-6.856	TYR1125, ASN1168, ARG1173	4
7	Quercetin	-6.791	ASN1168, TYR1125, ARG1173	4
8	Xanthoarnol	-6.556	ASN1168, TYR1125	4
9	Kaempferol	-6.462	TYR1125, LEU1120	4
10	Epicatechin	-6.405	TYR1125, PRO1110	3
11	Boeravinone D	-6.344	ASN1168, TYR1125	3
12	Boeravinone J	-6.323	TYR1125	2
13	Boeravinone M	-6.248	ASN1168	3
14	Coccineone B	-6.225	ASN1168, TYR1125	3
15	Boeravinone O	-6.205	TYR1125, ASN1168	3
16	Genistein	-6.199	TYR1125	2
17	Boeravinone G	-6.174	TYR1125, ASN1168	3
18	Nicotinic acid	-6.159	ASN1168	1
19	Boeravinone B	-6.135	PRO1110, TYR1125	2
20	Tyrosine	-6.121	LEU1120, ASN1168, TYR1125, PRO1110, PHE1111	6
21	6-Hydroxyflavone	-6.107	TYR1125	2
22	Dalbergioidin	-6.058	ASN1168, TYR1125	3
23	Tetrahydropiperine	-6.052	ARG1173	1
24	Riboflavin	-5.848	ASN1168, ARG1173	3
25	Catechin	-5.777	PRO1110, TYR1125	3
26	8-Zingerine	-5.737	ASN1168, TYR1125	4
27	Boeravinone A	-5.554	TYR1125	2
28	Assafoetidnol A	-5.554	TYR1125	2
29	2-O Methylarabinoisoflavone	-5.489	TYR1125, ASN1168	2
30	Aegelin	-5.446	LEU1109	1
31	Ascorbic acid	-5.356	PRO1110, TYR1125, ASN1168	4
32	Diacetoxy-4-gingerdiol	-5.07	TYR1125	3
33	Piperlongumine	-4.914	ASN1168, ARG1173	2
34	Marmeline	-4.734	ARG1173	1
35	Ligupersin A	-4.716	TYR1125	2
36	Microlobin	-4.589	TYR1125, ASN1168	3
37	Tartaric acid	-4.526	TYR1125	2
38	Boeravinone I	-4.519	PRO1114	1
39	Boeravinone K	-4.423	ARG1173, PRO1110	3
40	Coccineone E	-4.13	ARG1173	1
41	4-Gingerdiol	-4.004	TYR1125	4
42	Boeravinone C	-3.976	ARG1173	1
43	kievitone	-3.947	ASN1168, ARG1173	2
44	6-Gingerol	-3.941	ARG1173, TYR1125	4
45	Ethyl brevifolincarboxylate	-3.883	PRO1110	1
46	Camphor	-3.127	-	0
47	Kamolonol	-	-	-
48	Assafoetidinol B	-	-	-

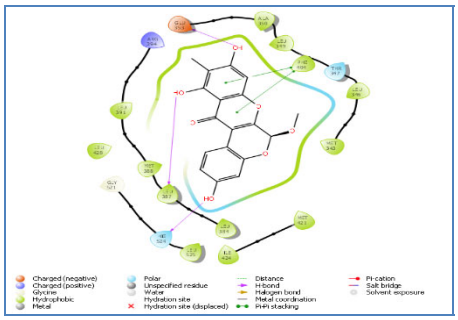
Suppl. Table 14 — Docking results of Epidermal Growth Factor Receptor (EGFR) (PDBID: 3W32) using Erlotinib as standard

S. No	Ligands	MolDock Score	Interacting Residues	Number of interactions
1	Erlotinib	-4.505	ARG803, ALA722	2
2	Dalbergioidin	-9.589	PHE856, CYS775, ASN842	4
3	Luteolin	-8.977	ASP855, MET793	3
4	Quercetin	-8.852	ASP855, MET793	5
5	Tetrahydropiperine	-8.757	-	2
6	Kaempferol	-8.724	ASP855, MET793	5
7	Marmeline	-8.019	PHE856, MET793	2
8	Catechin	-7.956	ASP800, MET793, GLN791, CYS797	6
9	Aegelin	-7.776	-	2
10	Epicatechin	-7.672	MET793, LEU718, THR854	5
11	6-Hydroxyflavone	-7.656	MET793	2
12	Piperlongumine	-7.38	-	0
13	Gentisic acid	-7.249	THR854, MET793	4
14	Protocatechuic acid	-7.155	MET793	2
15	Genistein	-7.114	MET793, CYS797, ASP800	3
16	Boeravinone J	-6.792	MET793, CYS797	2
17	Boeravinone A	-6.576	THR854, ARG841	3
18	Assafoetidnol A	-6.576	THR854, ARG841	3
19	4-Gingerdiol	-6.464	PHE856, THR854	3
20	Nicotinic acid	-6.439	MET793, THR854	3
21	Diacetoxy-4-gingerdiol	-6.31	CYS797, THR854, MET793	5
22	Ligupersin A	-6.301	THR854	2
23	Boeravinone F	-5.919	MET793, CYS797	2
24	6-Gingerol	-5.917	PHE856	3
25	Kievitone	-5.906	MET793, GLN791	3
26	8-Zingerine	-5.83	THR854, GLN791, CYS797, SER720	6
27	Tyrosine	-5.772	PHE856	2
28	2-O Methylarabinoisoflavone	-5.748	ASP800	1
29	Boeravinone O	-5.671	ASP800	2
30	Xanthoarnol	-5.546	ASP800	2
31	Riboflavin	-5.37	MET793	3
32	Coccineone E	-5.337	CYS797	1
33	Boeravinone I	-5.311	ASP800, CYS797	4
34	Tartaric acid	-5.305	MET793, THR854	5
35	Boeravinone B	-5.268	ASP837, ARG841, ASN842, ASP855	8
36	Boeravinone K	-5.261	CYS797	1
37	Boeravinone C	-5.248	ASP800, LEU718	3
38	Ascorbic acid	-5.163	ASP855, THR854	2
39	Coccineone B	-5.113	ASP800	1
40	Microlobin	-5.089	SER720, MET793, ARG803	3
41	Boeravinone G	-4.892	ASN842, ASP837	4
42	Boeravinone D	-4.806	ASP800	1
43	Boeravinone M	-4.739	-	3
44	Boeravinone E	-4.628	ARG803, ASP800	3
45	Camphor	-4.11	-	0
46	Ethyl brevifolincarboxylate	-4.04	ARG803	2
47	Kamolonol	-	-	-
48	Assafoetidinol B	-	-	-

(A) Estrogen receptor (ESR1)
(PDBID: 1YLM)

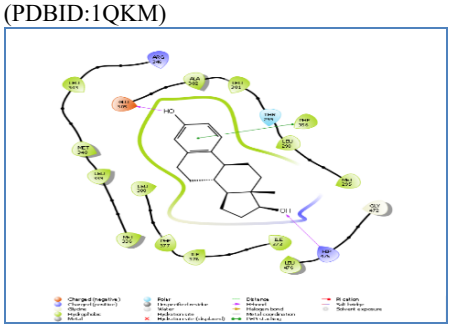


Fulvestrant

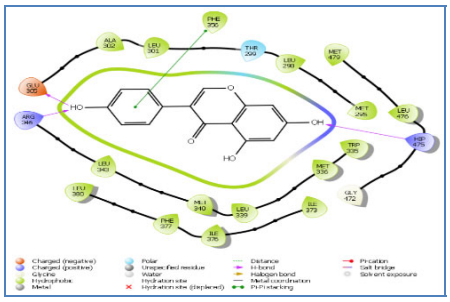


Boeravinone D

(B) Estrogen receptor beta (ESR2)
(PDBID:1QKM)

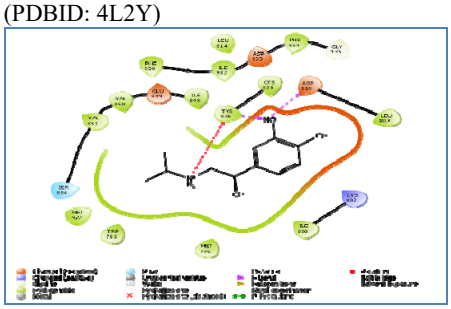


Estradiol

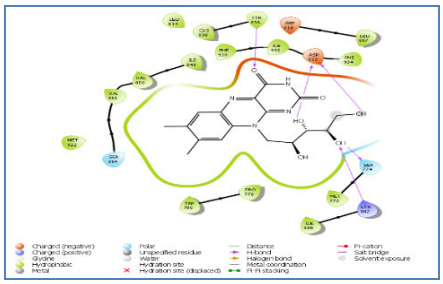


Genistein

(C) Phosphotidylinositol-3-kinase regulatory subunit alpha (PIK3R1)
(PDBID: 4L2Y)

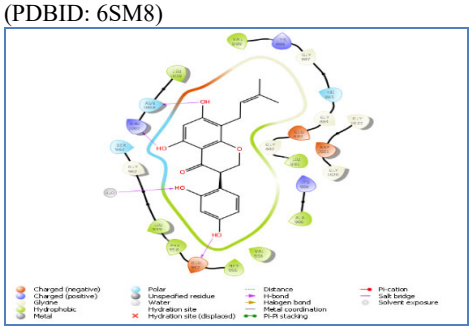


Isoproterenol

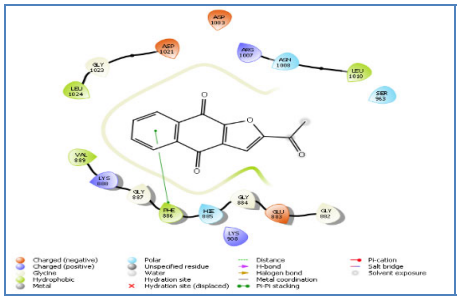


Riboflavin

(D) Signal transducer and activator of transcription-3 (STAT3)
(PDBID: 6SM8)

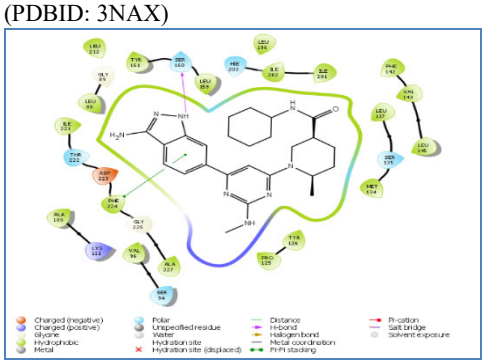


Napabucasin

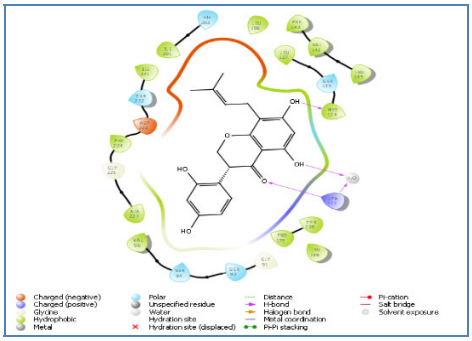


Kievitone

(E) 3-Phosphotidylinositol dependent protein kinase-1 (PDPK1)
(PDBID: 3NAX)

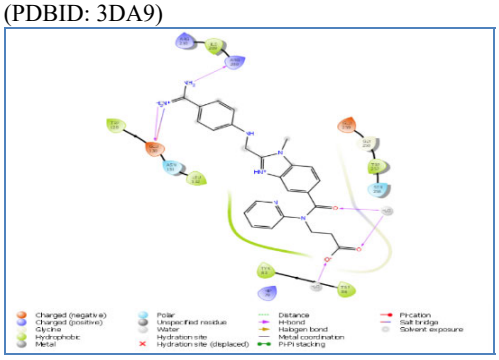


GSK2334470

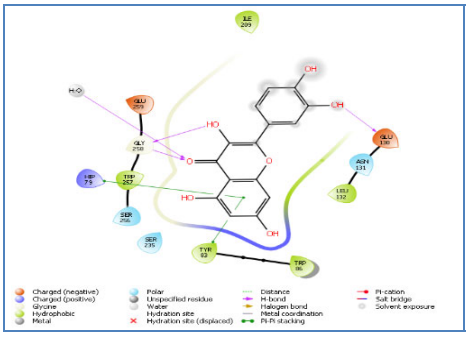


Kievitone

(F) Prothrombin (F2)
(PDBID: 3DA9)

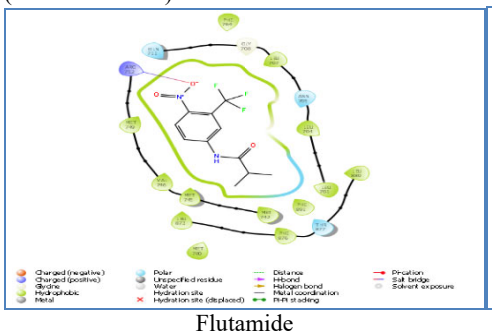


Dabigatran

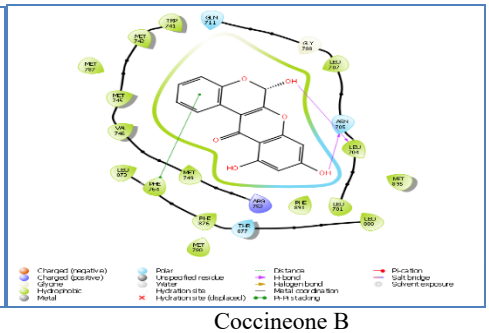


Quercetin

(G) Androgen Receptor (AR)
(PDBID: 2AMA)

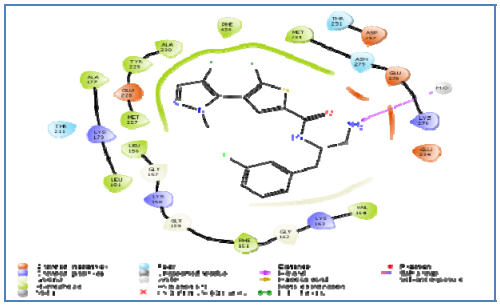


Flutamide

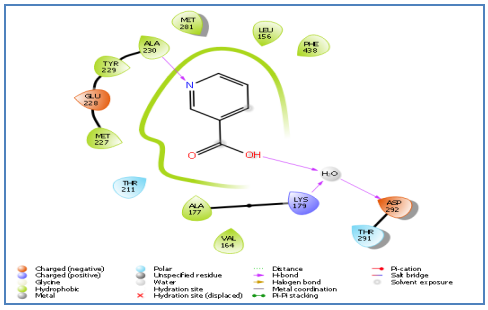


Coccineone B

(H) RAC-alpha Serine/threonine protein kinase (AKT1)
(PDBID:4GV1)

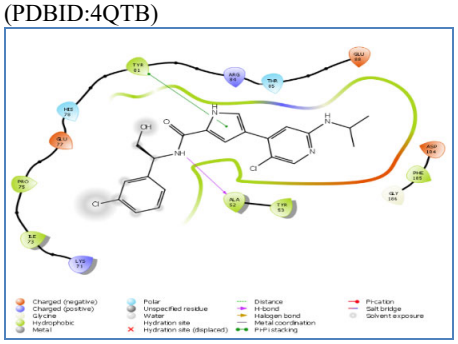


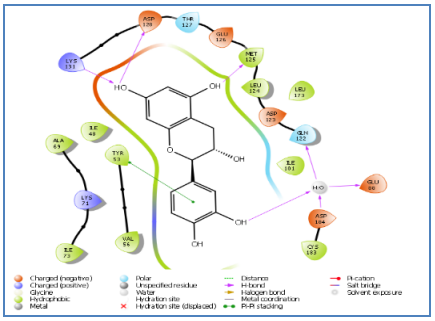
Afuresertib



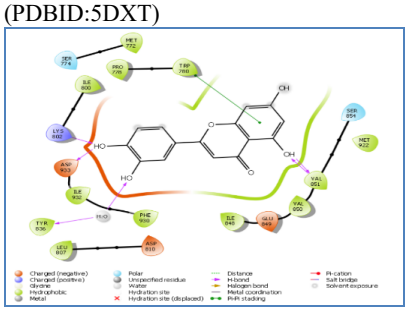
Nicotinic acid

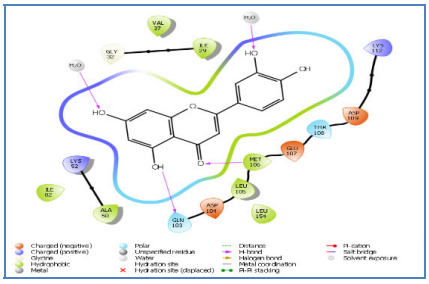
(I) Mitogen activated protein kinase 3 (MAPK3)
(PDBID:4QTB)


Ulixertinib

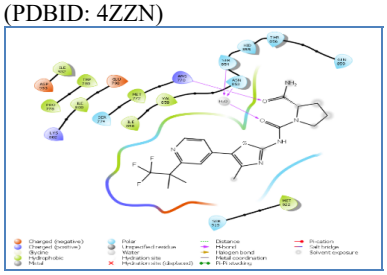

Catechin

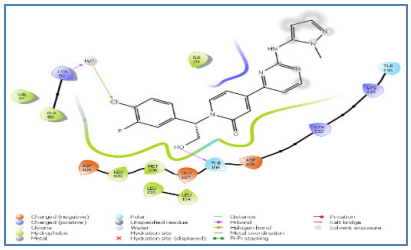
(J) Phosphatidylinositol 4,5-bisphosphate-3-kinase catalytic subunit alpha isoform (PIK3CA)
(PDBID:5DXT)


Alpelisib

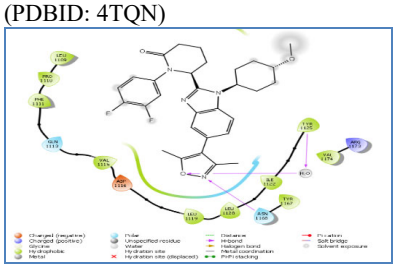

Luteolin

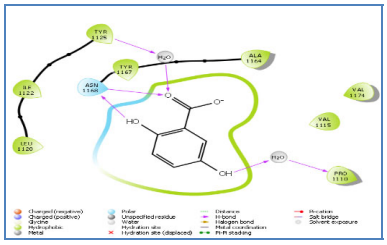
(K) Mitogen activated protein kinase 1 (MAPK1)
(PDBID: 4ZZN)


Ravoxertinib

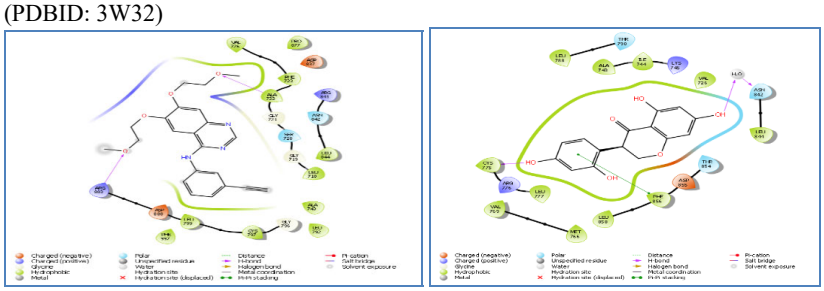

Luteolin

(L)CREB-Binding Protein (CREBBP)
(PDBID: 4TQN)


Inobrobid


Gentisic acid

(M) Epidermal Growth Factor Receptor (EGFR)
(PDBID: 3W32)



Erlotinib Dalbergioidin

Fig. 1 — 2D interactions of standard and top scoring phytoconstituent against targets