Supplementary Materials

Novel Small-Molecule Inhibitors of the SARS-CoV-2 Spike Protein Binding to Neuropilin 1

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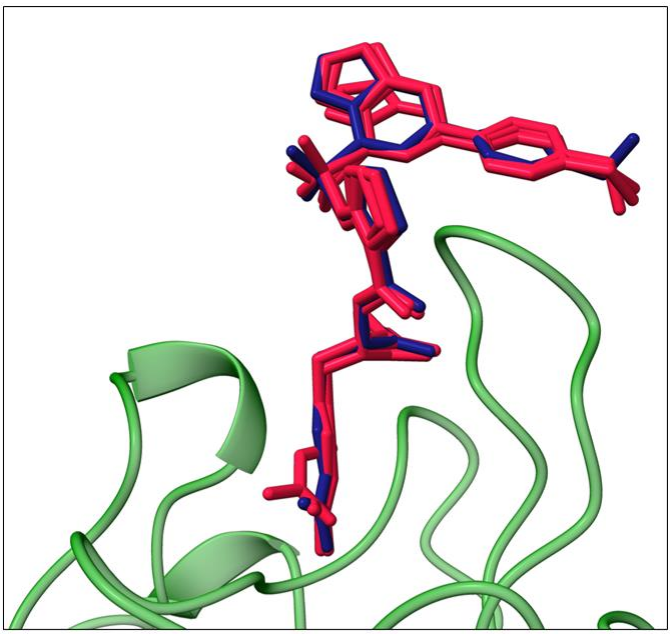

Figure S1. Spatial comparison of the natively present EG01377 conformation and its calculated docked poses for the molecular docking validation. The co-crystallized conformation is represented in blue, while its re-produced docked poses are depicted in red. NRP1 is in colored in green.

GOLD configuration file

AUTOMATIC SETTINGS
autoscale = 2

POPULATION
popsiz = auto
select_pressure = auto
n_islands = auto
maxops = auto
niche_siz = auto

GENETIC OPERATORS
pt_crosswt = auto
allele_mutatewt = auto
migratewt = auto

FLOOD FILL
radius = 10
origin = 0 0 0
do_cavity = 1
floodfill_atom_no = 0
floodfill_center = cavity_from_ligand 17
atoms

DATA FILES
param_file = DEFAULT
set_ligand_atom_types = 1
set_protein_atom_types = 0
tordist_file = DEFAULT
make_subdirs = 0
save_lone_pairs = 0
fit_points_file = fit_pts.mol2
read_fitpts = 0

FLAGS
internal_ligand_h_bonds = 0
flip_free_corners = 0
match_ring_templates = 0
flip_amide_bonds = 0
flip_planar_n = 1 flip_ring_NRR
flip_ring_NHR
flip_pyramidal_n = 0
rotate_carboxylic_oh = flip
use_tordist = 1
postprocess_bonds = 1
rotatable_bond_override_file = DEFAULT
solvate_all = 1

TERMINATION
early_termination = 1
n_top_solutions = 3
rms_tolerance = 1

CONSTRAINTS
force_constraints = 0

COVALENT BONDING
covalent = 0

SAVE OPTIONS
save_score_in_file = 1
save_protein_torsions = 0
clean_up_option save_top_n_solutions 3
clean_up_option
delete_redundant_log_files
clean_up_option
delete_all_initialised_ligands
clean_up_option delete_empty_directories
clean_up_option delete_rank_file
clean_up_option delete_all_log_files
output_file_format = MACCS

FITNESS FUNCTION SETTINGS
initial_virtual_pt_match_max = 3
relative_ligand_energy = 1
gold_fitfunc_path = plp
score_param_file = DEFAULT

CONSTRAINTS
constraint protein_h_bond 10.0000
0.005000 1215 1305 1167 411 754 755

Table S1. ZINC15 [1] name and MolPort ID (vendor) of top 20 compounds obtained from molecular docking.

COMPOUND	ZINC15 NAME	MolPort ID
1	ZINC000390834636	MolPort-039-314-631
2	ZINC000065529168	MolPort-019-672-384
3	ZINC000070040863	MolPort-020-084-791
4	ZINC000024451999	MolPort-009-171-237
5	ZINC000020732290	MolPort-006-814-244
6	ZINC000057997476	MolPort-009-073-388
7	ZINC000015721546	MolPort-002-516-537
8	ZINC000012428013	MolPort-002-749-663
9	ZINC000003295631	MolPort-004-259-418
10	ZINC000095995534	MolPort-028-795-075
11	ZINC000058026820	MolPort-009-102-148
12	ZINC000048326459	MolPort-009-073-421
13	ZINC000008584635	MolPort-007-627-531
14	ZINC000003271207	MolPort-004-257-684
15	ZINC000003319242	MolPort-004-262-387
16	ZINC000008708441	MolPort-005-566-437
17	ZINC000012769255	MolPort-005-749-385
18	ZINC000426477237	MolPort-042-631-013
19	ZINC000036360945	MolPort-008-317-429
20	ZINC000009422900	MolPort-005-913-364
21 (EG00229) [2]		MolPort-046-416-868
22 [3]		MolPort-003-000-781

REFERENCES

1. ZINC. Available online: https://zinc15.docking.org/ (accessed Oct 6, 2021)
2. Jarvis, A.; Allerston, C. K.; Jia, H.; Herzog, B.; Garza-Garcia, A.; Winfield, N.; Ellard, K.; Aqil, R.; Lynch, R.; Chapman, C.; Hartzoulakis, B.; Nally, J.; Stewart, M.; Cheng, L.; Menon, M.; Tickner, M.; Djordjevic, S.; Driscoll, P. C.; Zachary, I.; Selwood, D. L. Small molecule inhibitors of the neuropilin-1 vascular endothelial growth factor A (VEGF-A) interaction. J. Med. Chem. 2010, 53, 2215-2226. DOI: 10.1021/jm901755g.
3. Perez-Miller, S.; Patek, M.; Moutal, A.; Duran, P.; Cabel, C. R.; Thorne, C. A.; Campos, S. K.; Khanna, R. Novel compounds targeting neuropilin receptor 1 with potential to interfere with SARS-CoV-2 virus entry. ACS Chem. Neurosci. 2021, 12, 1299-1312. DOI: 10.1021/acschemneuro.0c00619.