SUPPLEMENTARY MATERIALS

A Series of Novel Integrastatins Analogues: In Silico Study of Physicochemical and Bioactivity Parameters

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[2]*Institute of Chemistry, Saint Petersburg State University, Saint Petersburg, Russia;*
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*(*Corresponding author's e-mail: ipustolaikina@gmail.com)*

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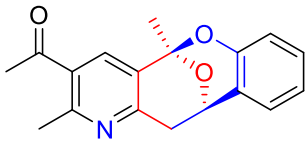
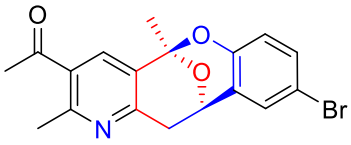
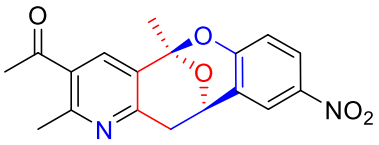
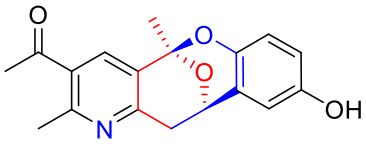
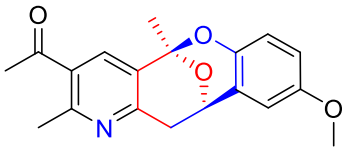
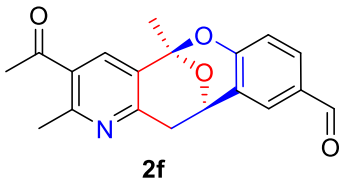
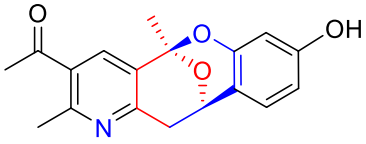
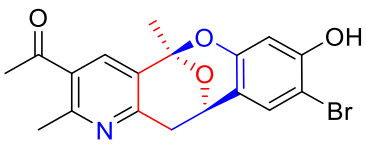
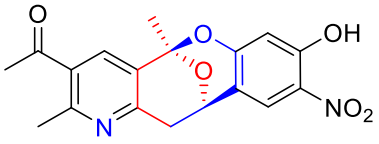
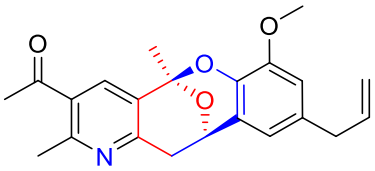
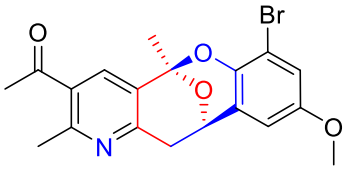
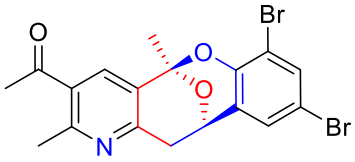
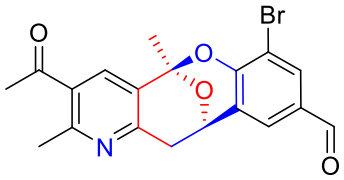
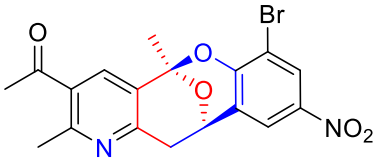
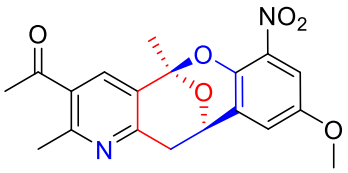
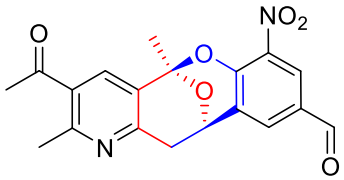
Table S1

2D molecular structures of the tested compounds and their IUPAC names

Compound	IUPAC names
 **2a**	1-((5S,11S)-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2b**	1-((5R,11R)-9-bromo-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2c**	1-((5R,11R)-2,5-dimethyl-9-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2d**	1-((5R,11R)-9-hydroxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2e**	1-((5R,11R)-9-methoxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2f**	(5R,11R)-3-acetyl-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridine-9-carbaldehyde
 **2g**	1-((5R,11R)-8-hydroxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2h**	1-((5R,11R)-9-bromo-8-hydroxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one

Compound	IUPAC names
 **2i**	1-((5R,11R)-8-hydroxy-2,5-dimethyl-9-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2j**	1-((5R,11R)-9-allyl-7-methoxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2k**	1-((5R,11R)-7-bromo-9-methoxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2l**	1-((5R,11R)-7,9-dibromo-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2m**	(5R,11R)-3-acetyl-7-bromo-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridine-9-carbaldehyde
 **2n**	1-((5R,11R)-7-bromo-2,5-dimethyl-9-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2o**	1-((5R,11R)-9-methoxy-2,5-dimethyl-7-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2p**	(5R,11R)-3-acetyl-2,5-dimethyl-7-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridine-9-carbaldehyde

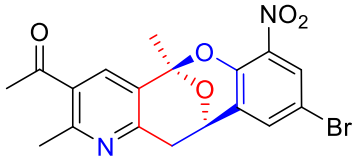
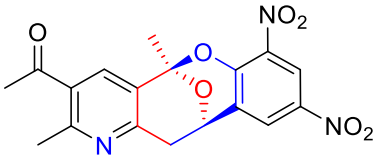
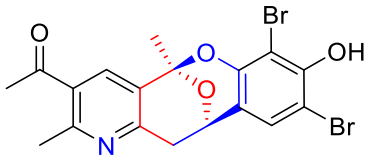
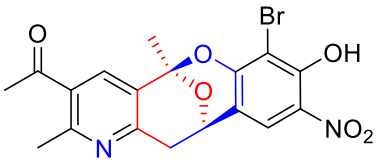
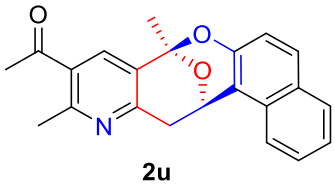
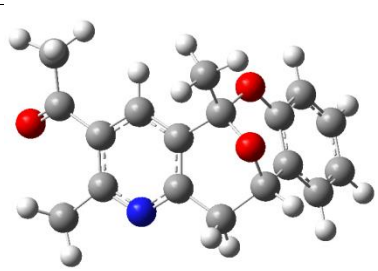
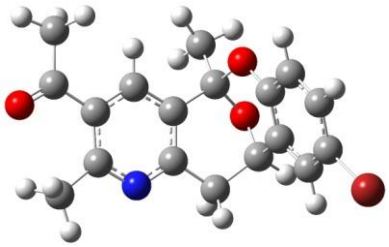
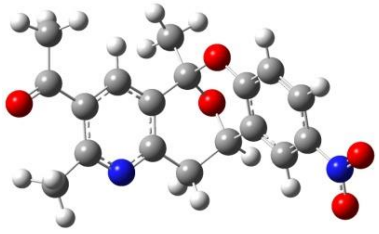
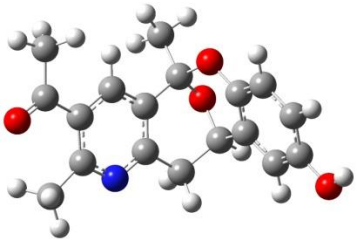
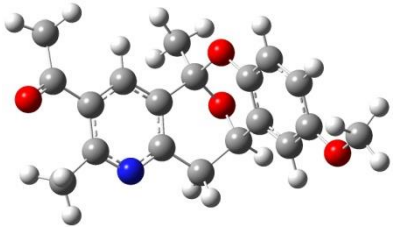
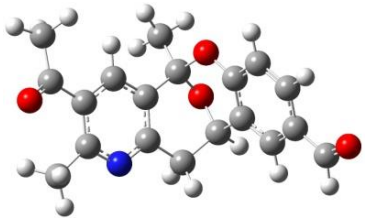
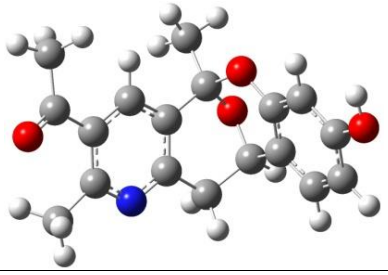
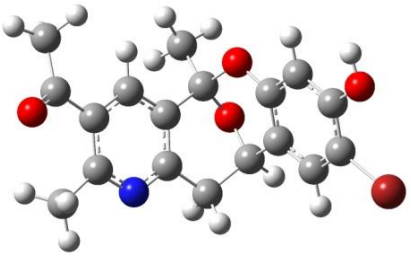
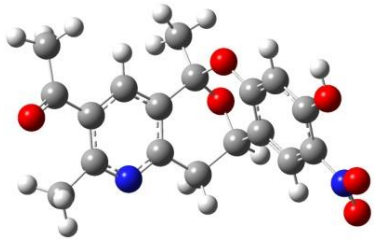
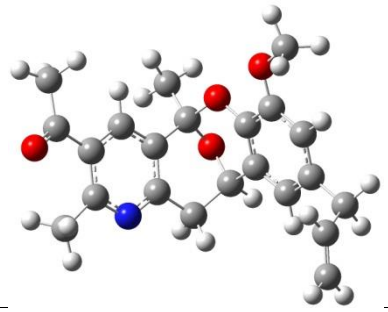
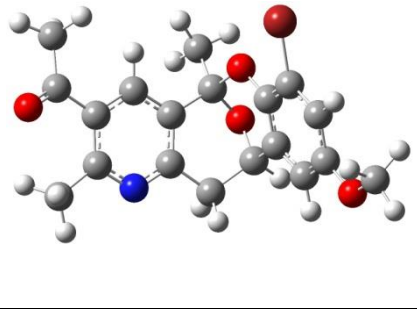
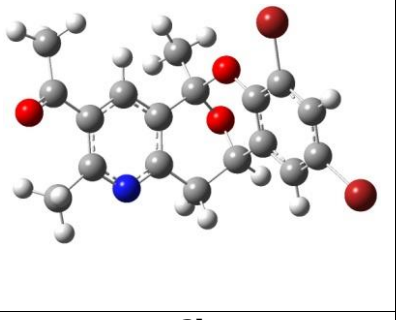
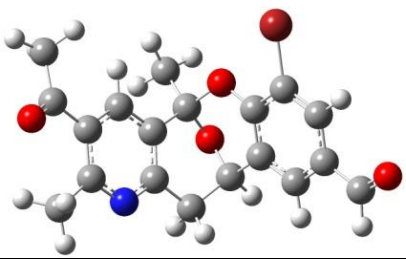
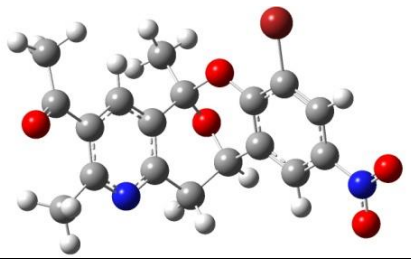
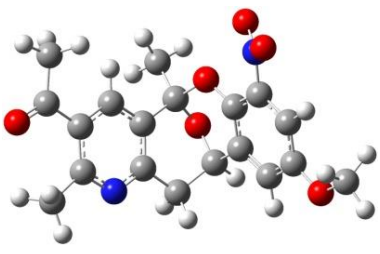
Compound	IUPAC names
 **2q**	1-((5R,11R)-9-bromo-2,5-dimethyl-7-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2r**	1-((5R,11R)-2,5-dimethyl-7,9-dinitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2s**	1-((5R,11R)-7,9-dibromo-8-hydroxy-2,5-dimethyl-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2t**	1-((5R,11R)-7-bromo-8-hydroxy-2,5-dimethyl-9-nitro-11,12-dihydro-5H-5,11-epoxybenzo[7,8]oxocino[4,3-b]pyridin-3-yl)ethan-1-one
 **2u**	1-((8R,14R)-8,11-dimethyl-13,14-dihydro-8H-8,14-epoxynaphtho[1',2':7,8]oxocino[4,3-b]pyridin-10-yl)ethan-1-one

Table S2

3D optimized molecular structures of the tested compounds

		
2a	**2b**	**2c**
		
2d	**2e**	**2f**
		
2g	**2h**	**2i**
		
2j	**2k**	**2l**
		
2m	**2n**	**2o**

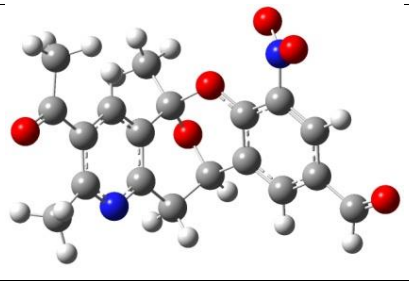
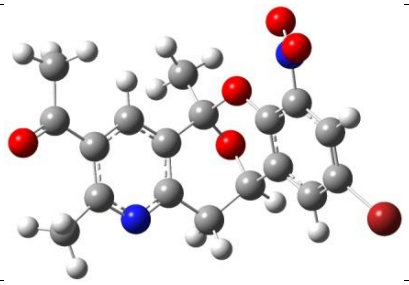
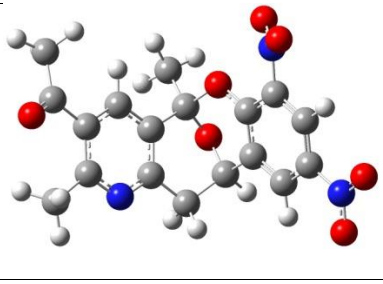
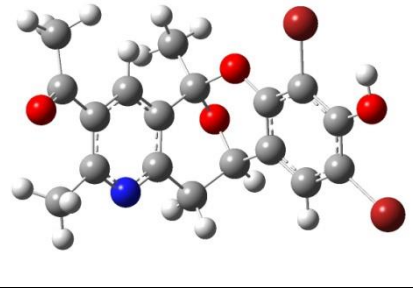
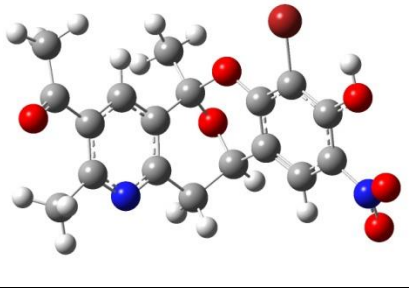
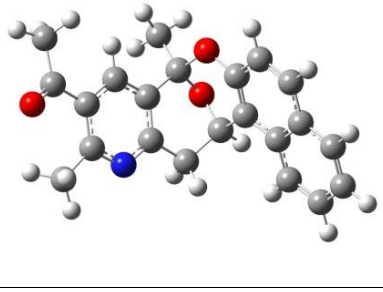
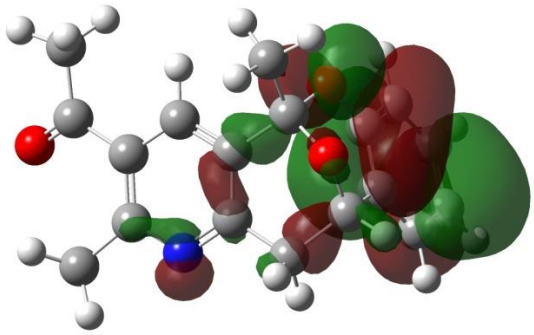
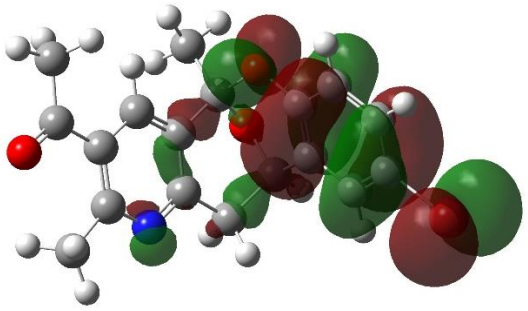
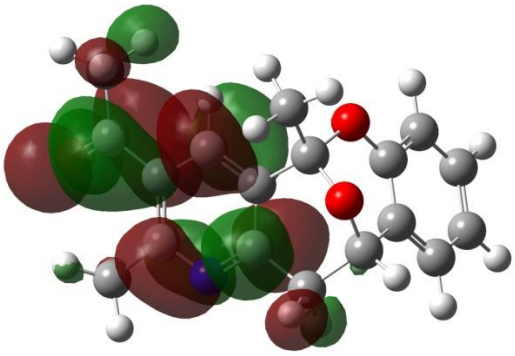
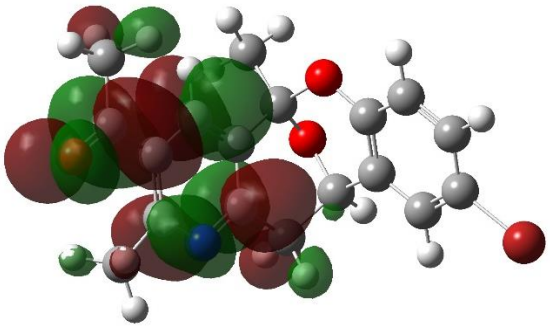
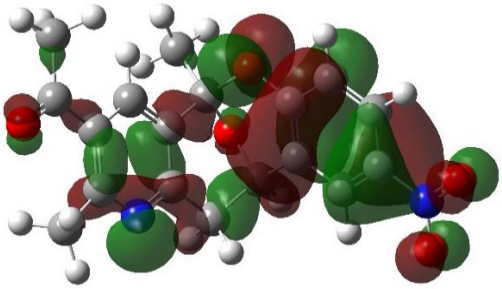
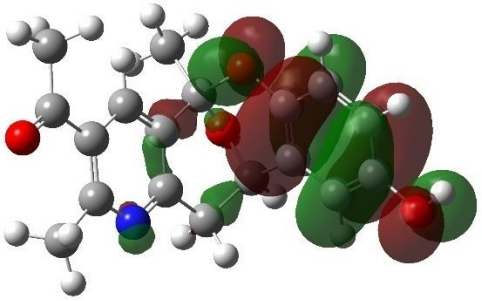
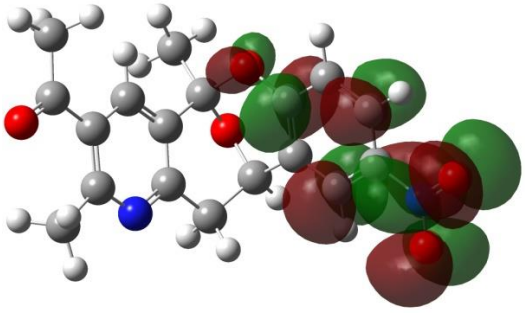
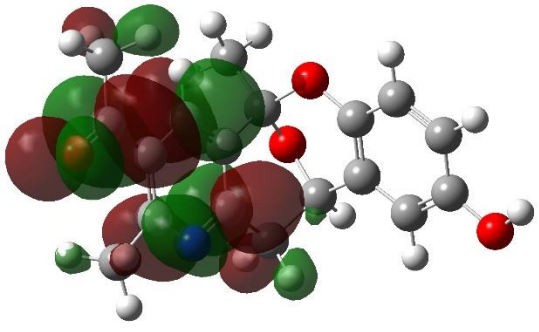
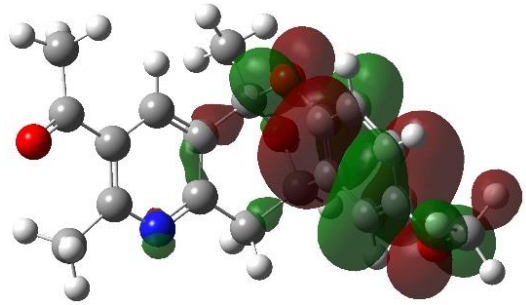
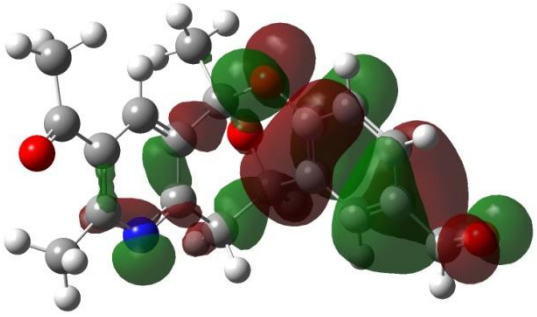
		
2p	**2q**	**2r**
		
2s	**2t**	**2u**

Table S3

HOMO and LUMO frontier molecular orbitals diagrams

	2a	2b
HOMO		
E, A.U.	**-0,24009**	**-0,23887**
LUMO		
E, A.U.	**-0,07858**	**-0,08015**
	2c	**2d**
HOMO		
E, A.U.	**-0,25979**	**-0,22295**
LUMO		
E, A.U.	**-0,11039**	**-0,07932**

	2e	2f
HOMO		
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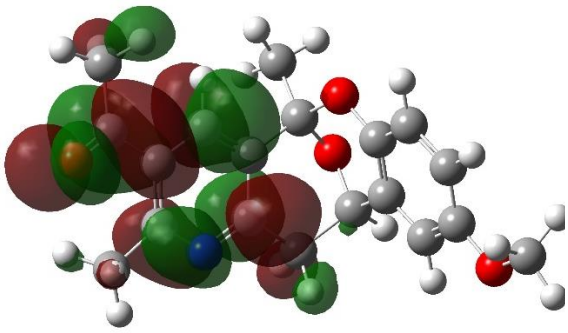
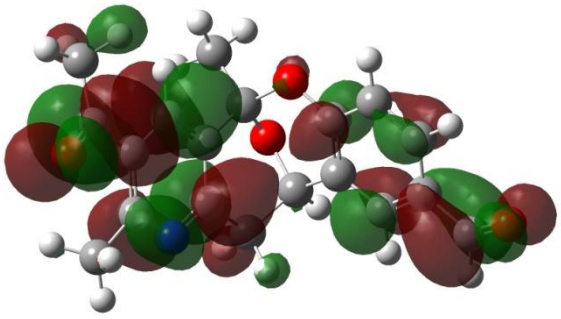
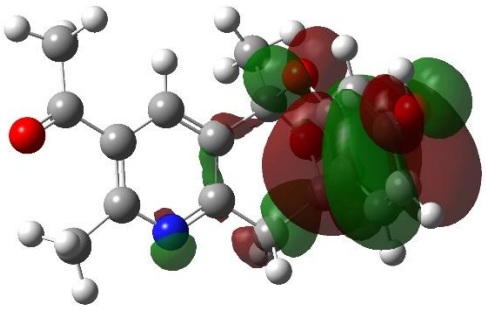
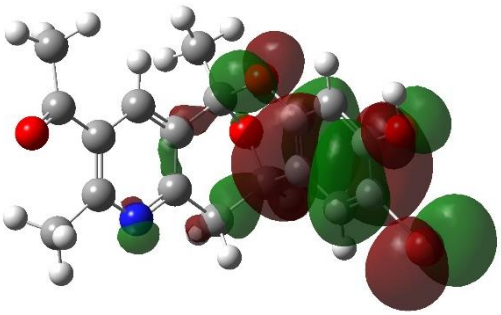
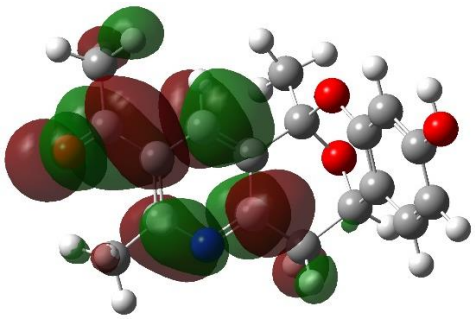
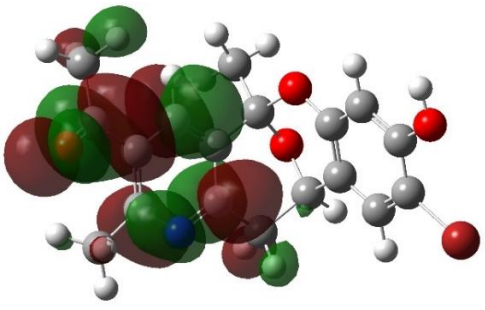
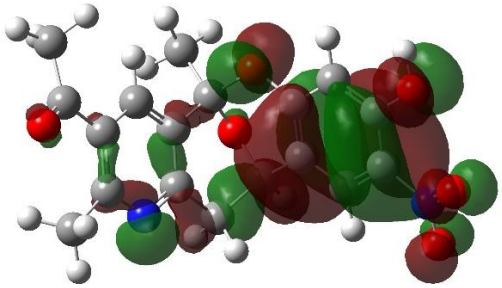
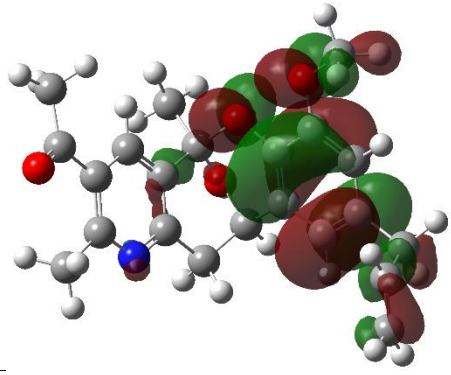
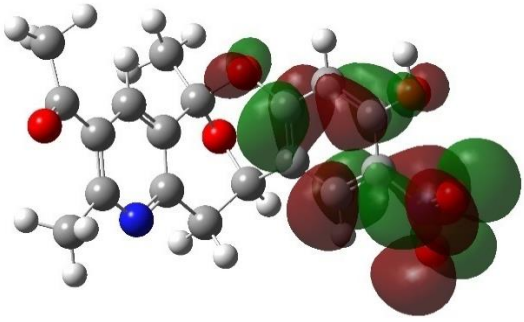
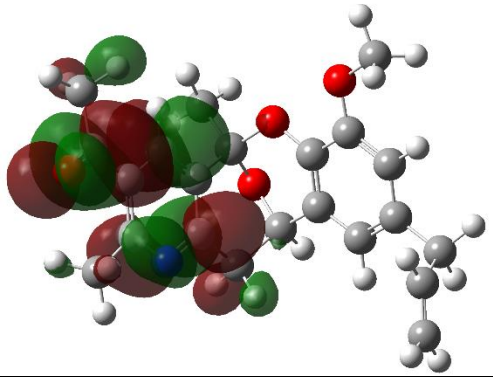
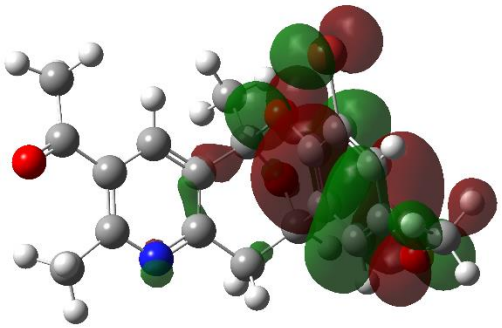
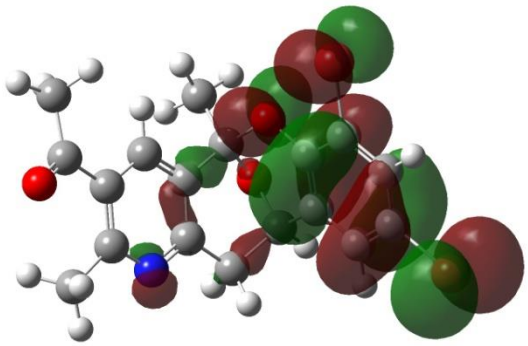
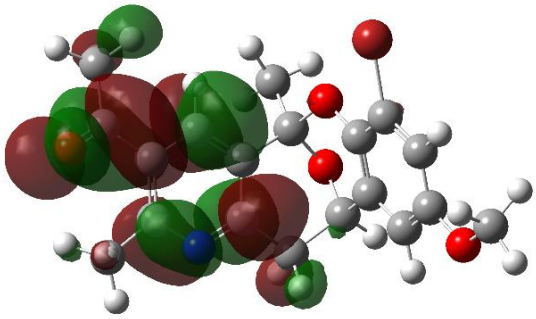
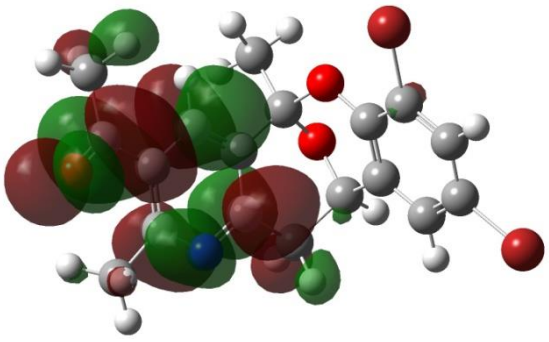
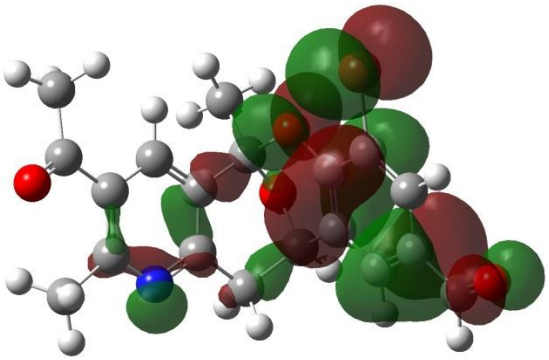
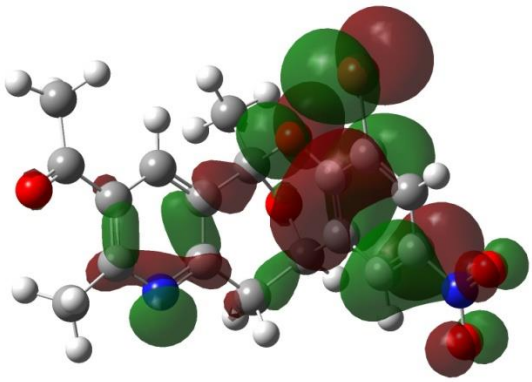
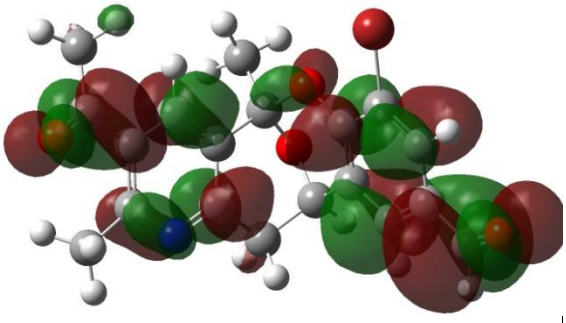
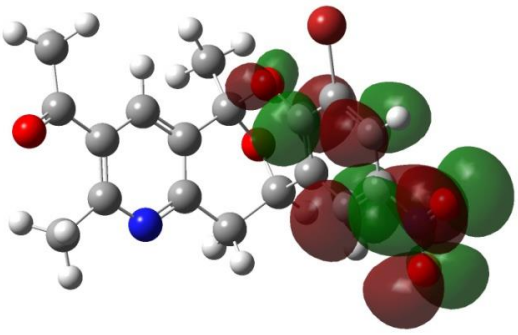
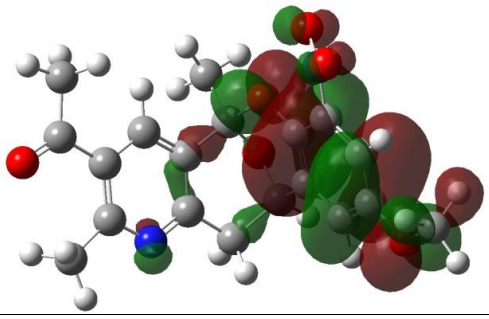
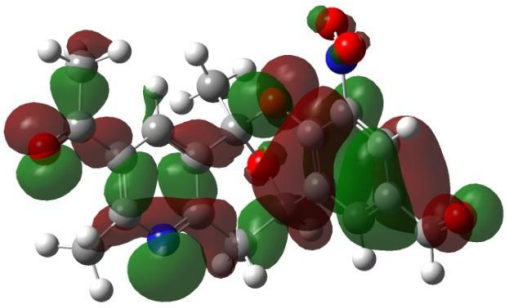
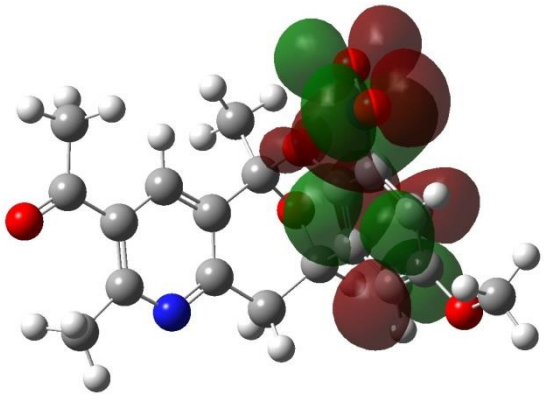
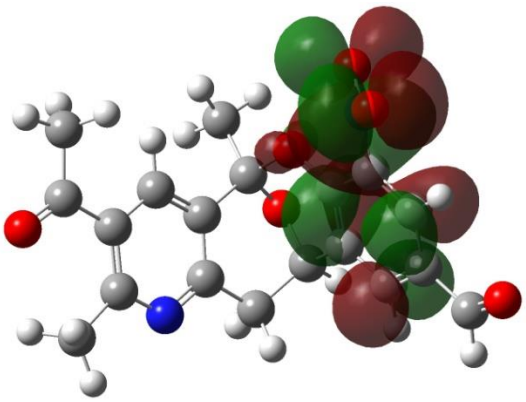
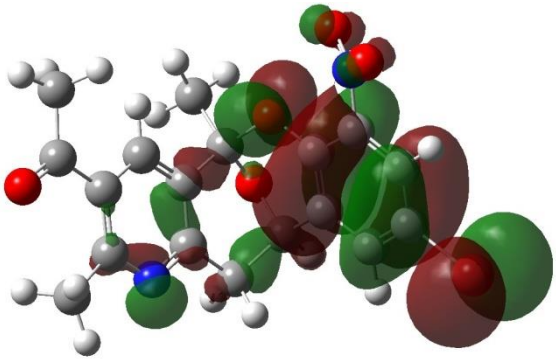
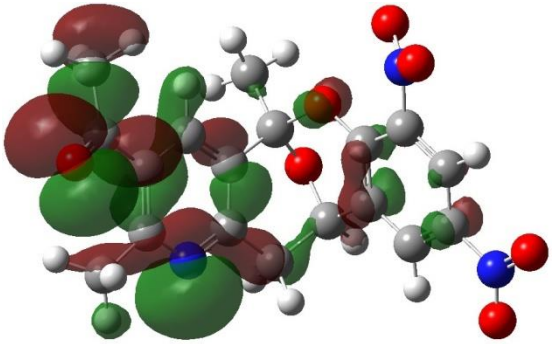
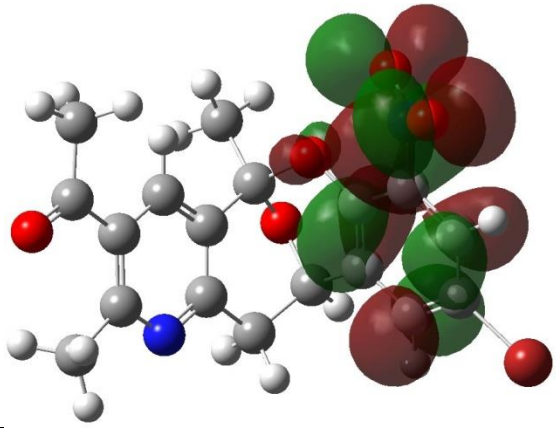
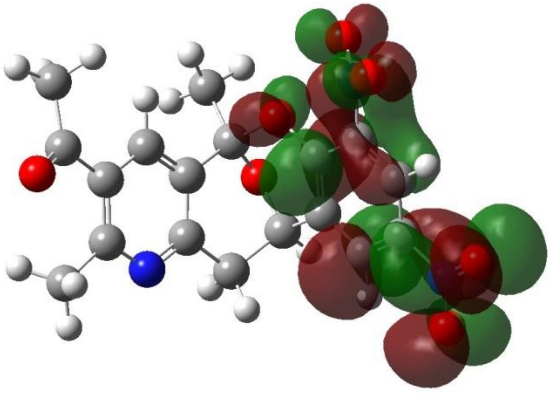
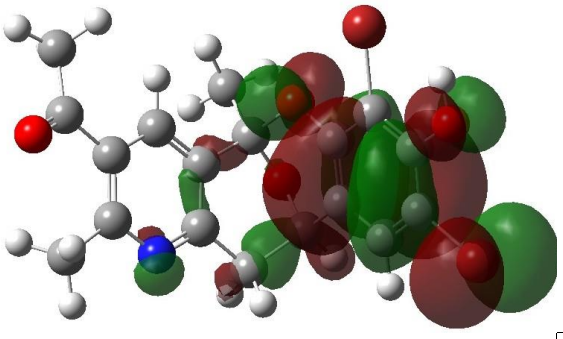
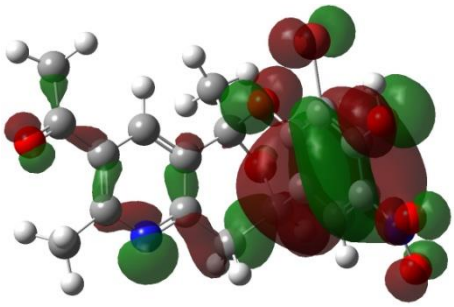
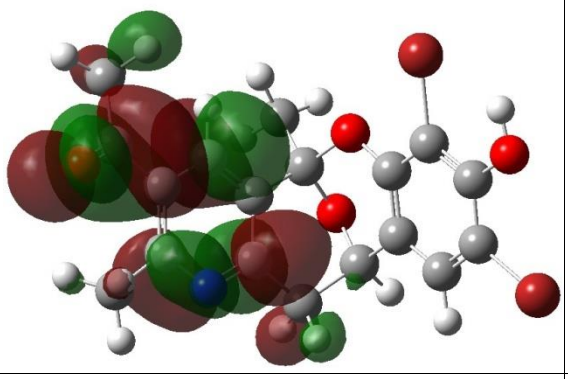
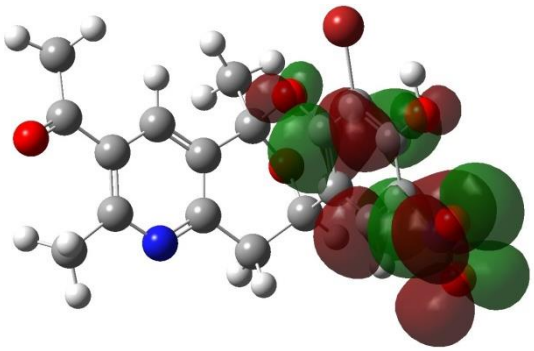
LUMO		
E, A.U.	**-0,07857**	**-0,08090**
	2g	**2h**
HOMO		
E, A.U.	**-0,23257**	**-0,23383**
LUMO		
E, A.U.	**-0,07847**	**-0,07887**

	2i	2j
HOMO		
E, A.U.	**-0,25565**	**-0,22203**
LUMO		
E, A.U.	**-0,10513**	**-0,07846**
	2k	**2l**
HOMO		
E, A.U.	**-0,22575**	**-0,24301**
LUMO		
E, A.U.	**-0,07923**	**-0,08004**

	2m	2n
HOMO		
E, A.U.	**-0,25430**	**-0,26115**
LUMO		
E, A.U.	**-0,08350**	**-0,11425**
	2o	**2p**
HOMO		
E, A.U.	**-0,23710**	**-0,26497**
LUMO		
E, A.U.	**-0,10920**	**-0,11274**

	2q	2r
HOMO		
E, A.U.	**-0,25372**	**-0,26861**
LUMO		
E, A.U.	**-0,11311**	**-0,11923**
	2s	**2t**
HOMO		
E, A.U.	**-0,23929**	**-0,25988**
LUMO		
E, A.U.	**-0,07972**	**-0,10819**

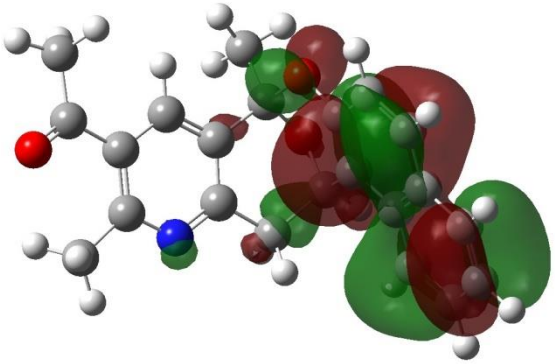
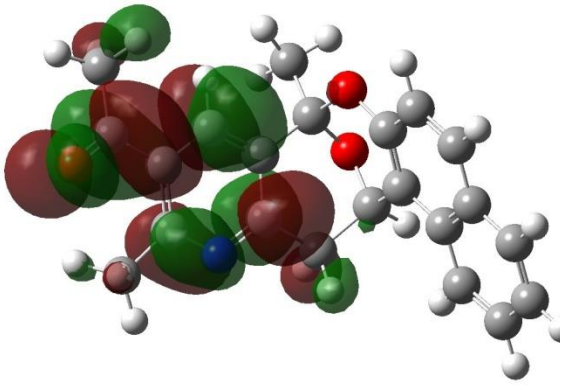
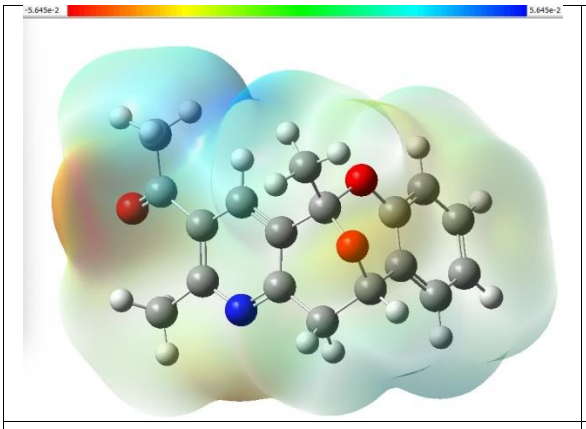
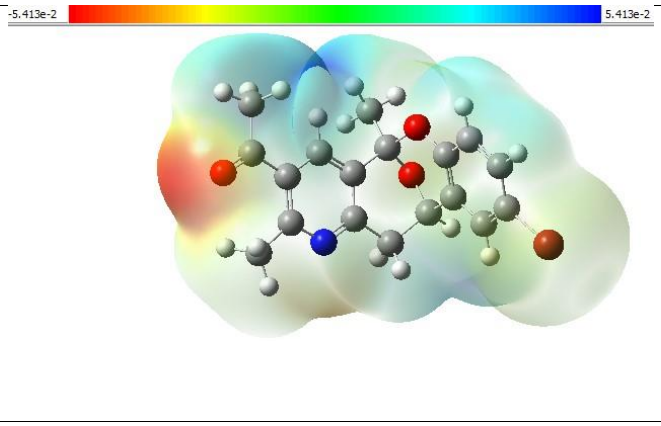
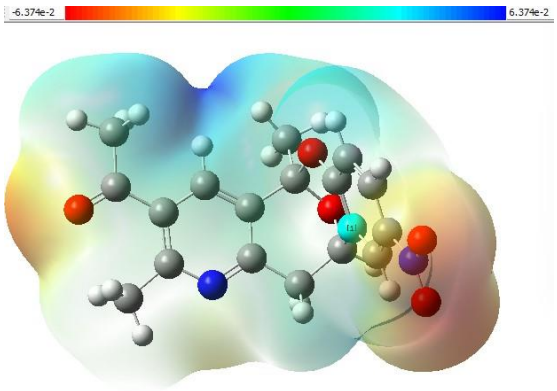
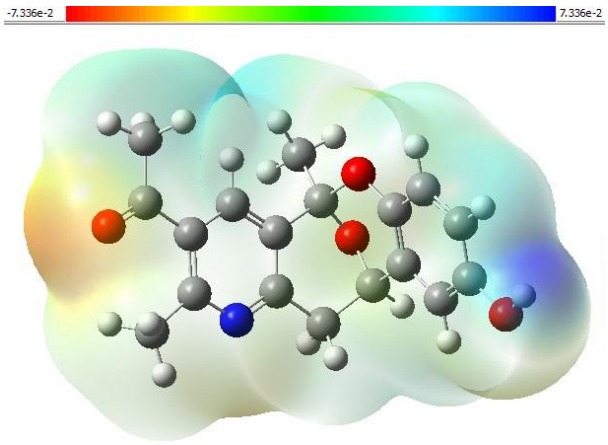
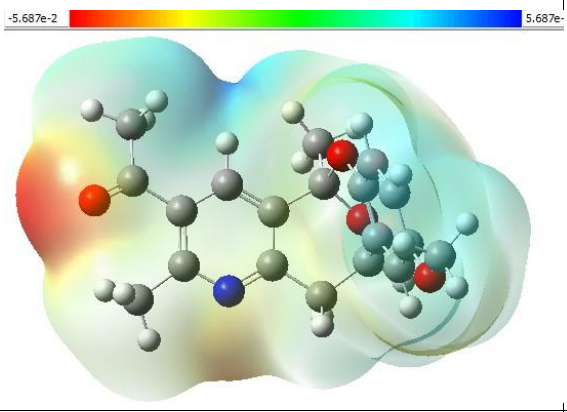
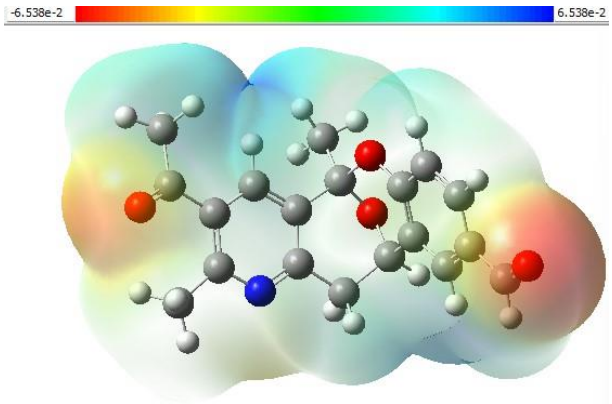
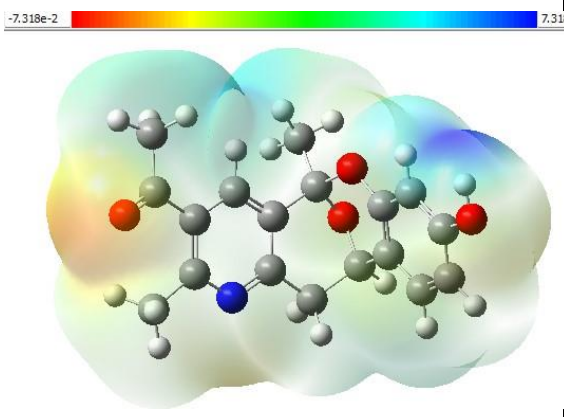
	2u	
HOMO		
E, A.U.	**-0,22553**	
LUMO		
E, A.U.	**-0,07880**	

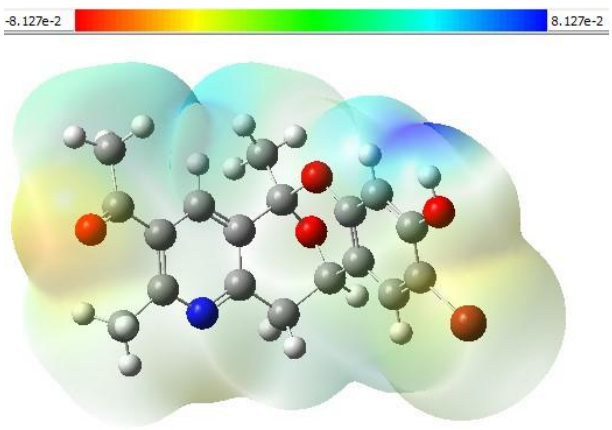
Table S4

Molecular electrostatic potential map (MEP) of 2a-u molecules

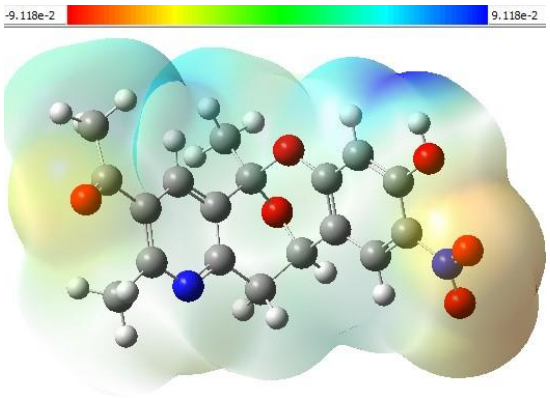
	
2a	**2b**
	
2c	**2d**
	
2e	**2f**



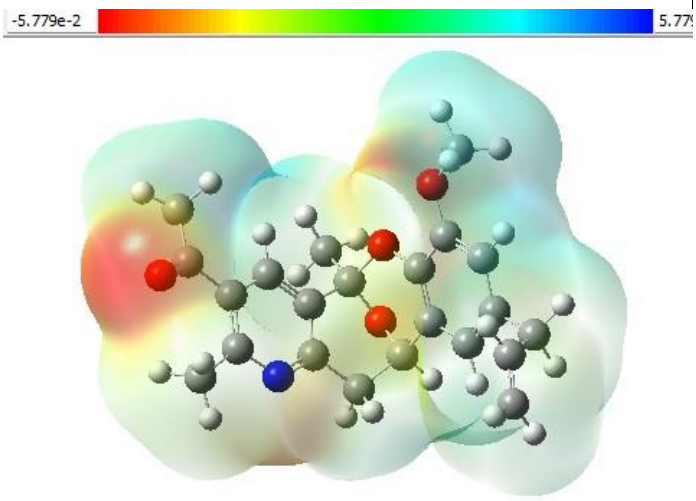
2g



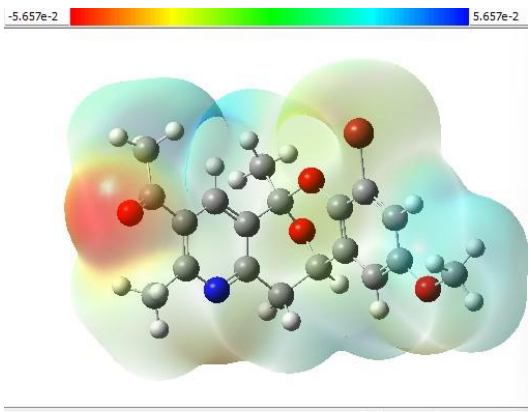
2h



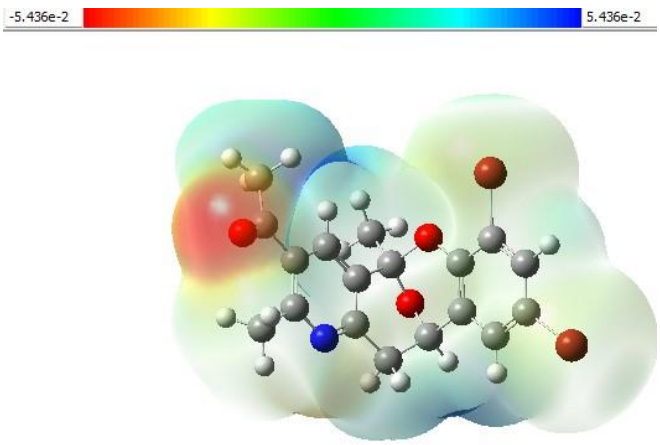
2i



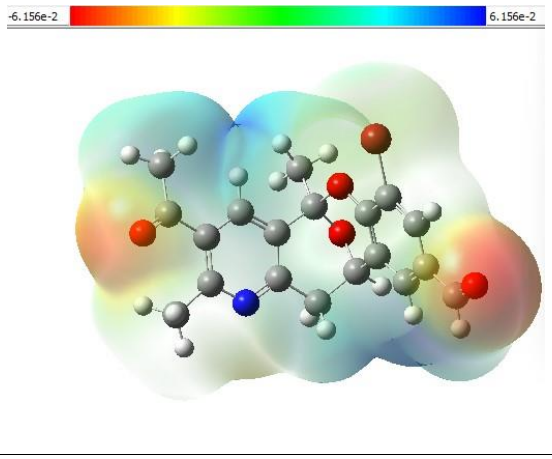
2j



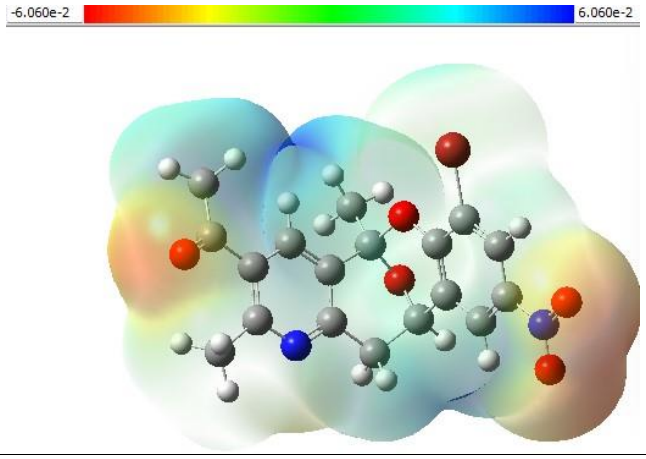
2k



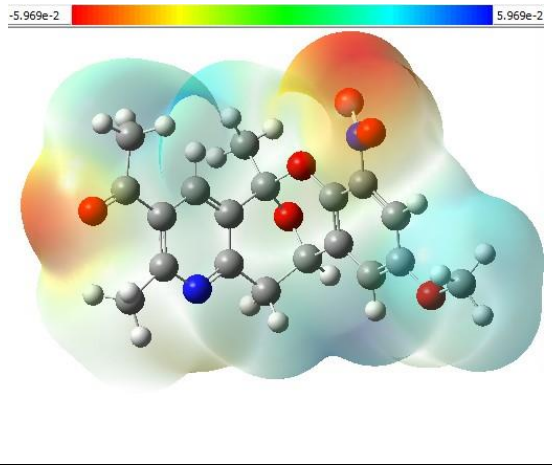
2l



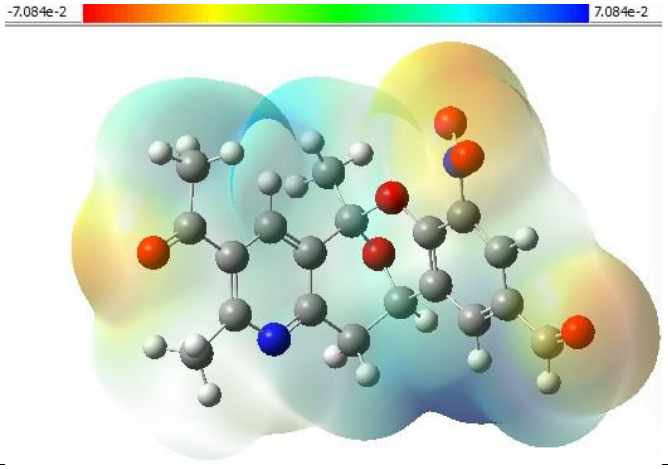
2m



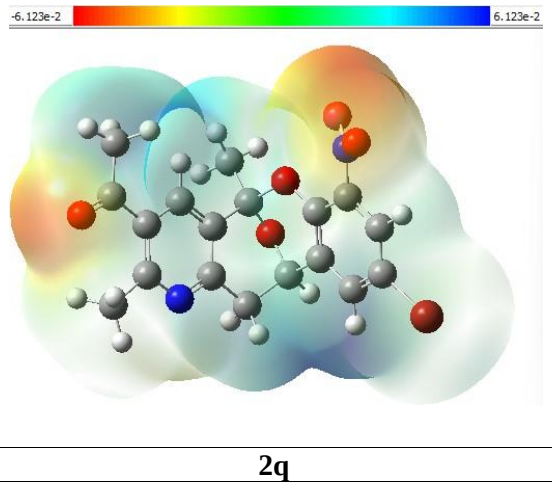
2n



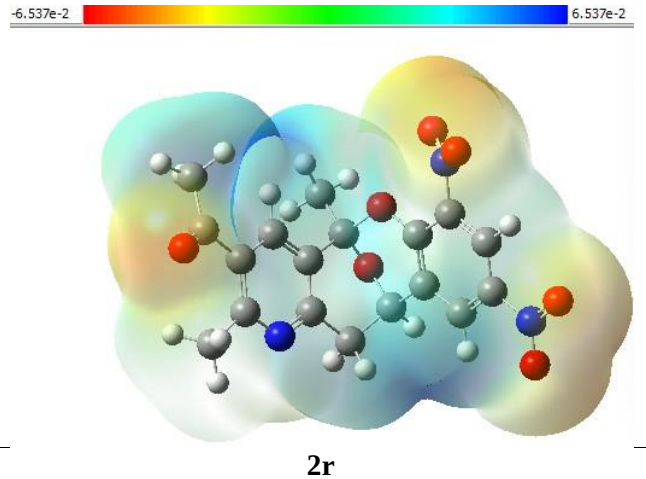
2o



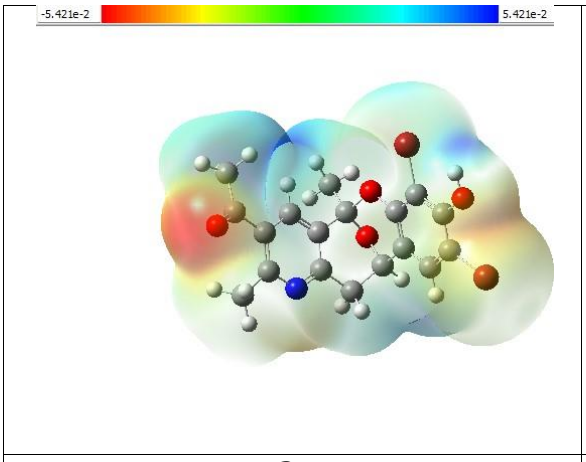
2p



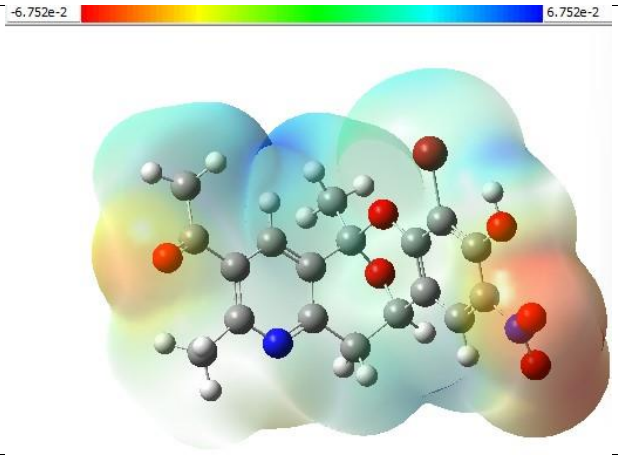
2q



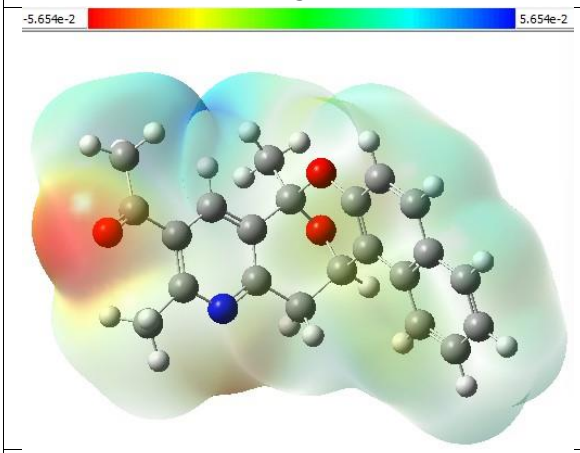
2r



2s



2t

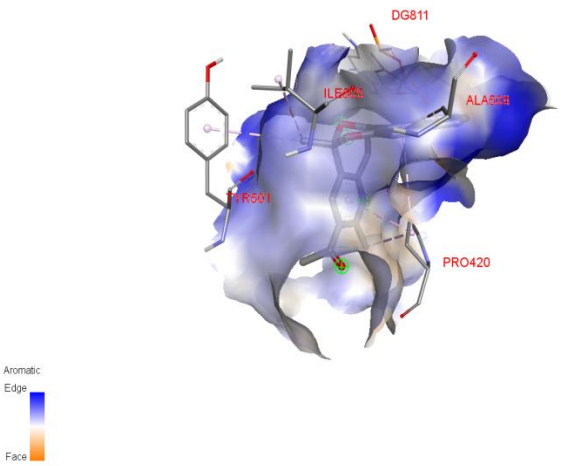


2u

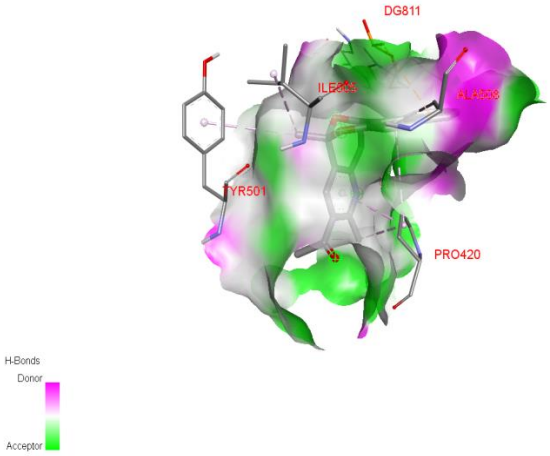
Table S5

Protein 3V81 -Ligand 2u interactions

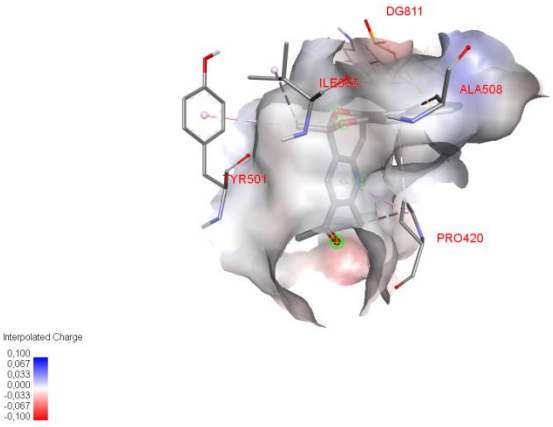
Receptor surface: Aromatic



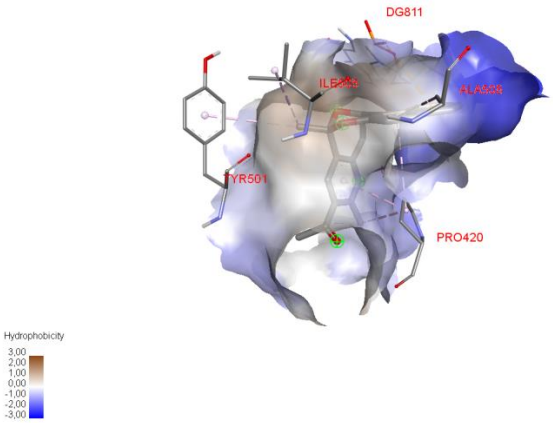
Receptor surface: H-Bond



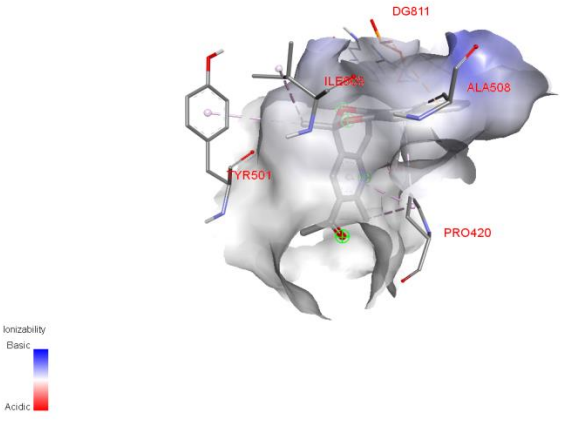
Receptor surface: Charge



Receptor surface: Hydrophobic



Receptor surface: Ionizability



Receptor surface: SAS

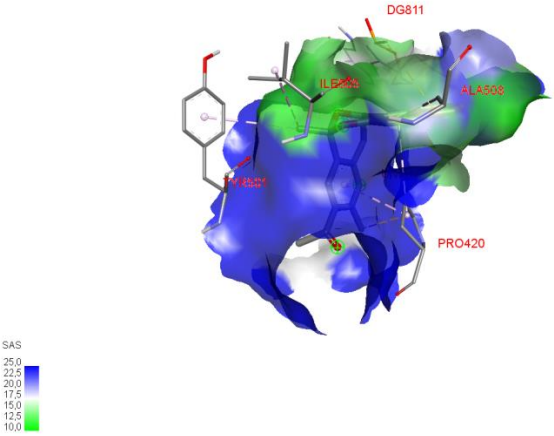
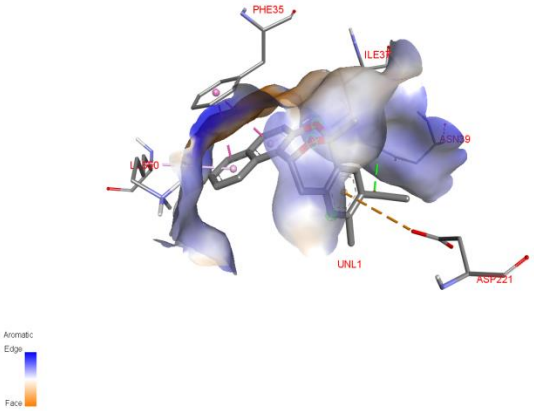


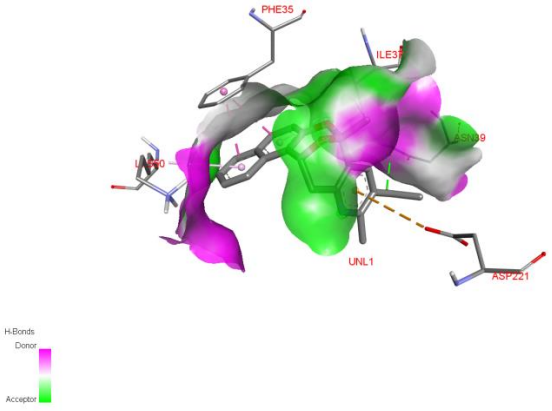
Table S6

Protein 7AAP-Ligand 2u interactions

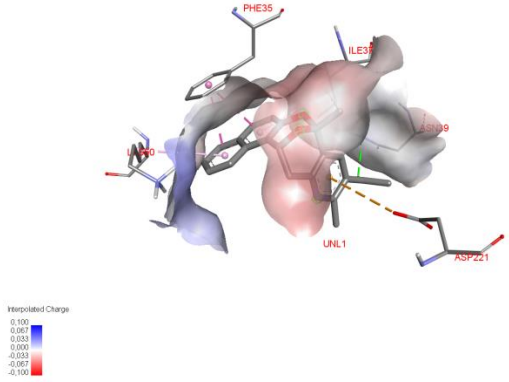
Receptor surface: Aromatic



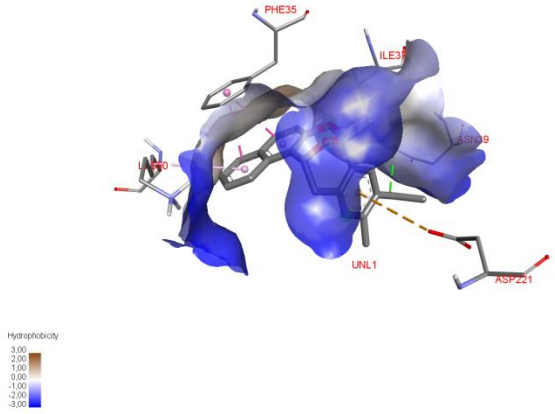
Receptor surface: H-Bond



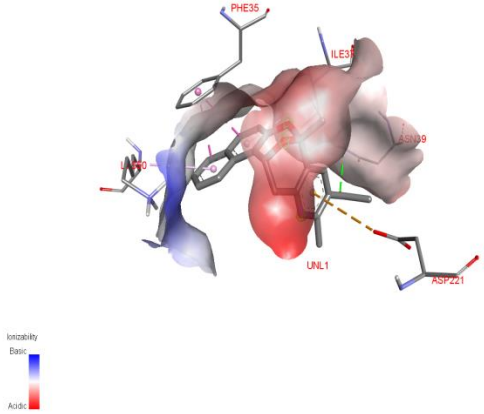
Receptor surface: Charge



Receptor surface: Hydrophobic



Receptor surface: Ionizability



Receptor surface: SAS

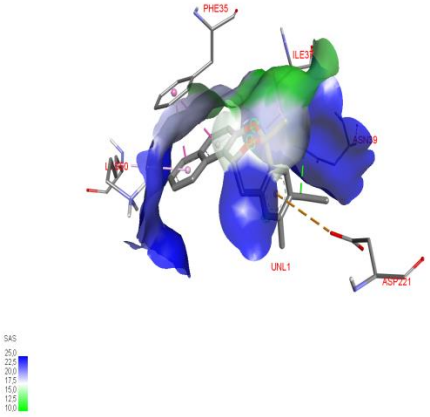
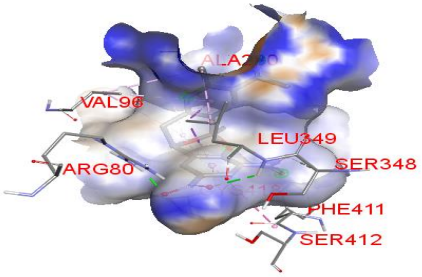
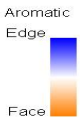


Table S7

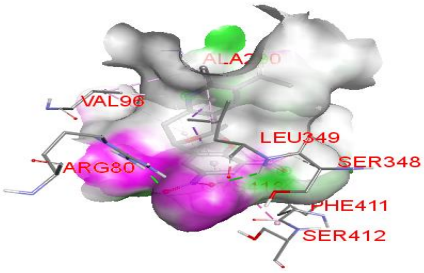
Protein 4GQS -Ligand 2r interactions

Receptor surface: Aromatic

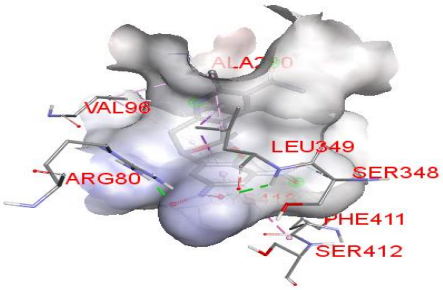


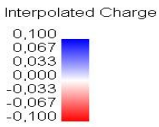


Receptor surface: H-Bond

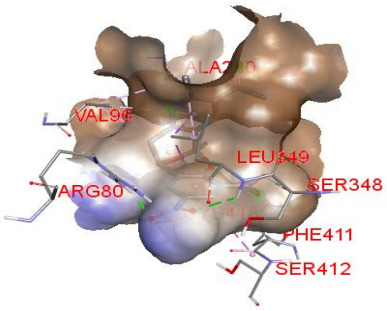


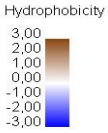
Receptor surface: Charge



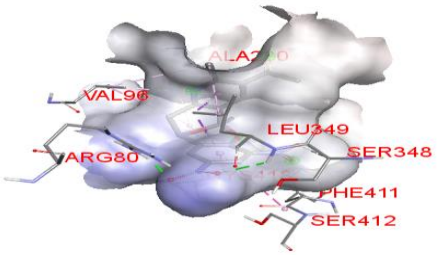


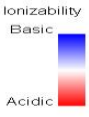
Receptor surface: Hydrophobic





Receptor surface: Ionizability





Receptor surface: SAS