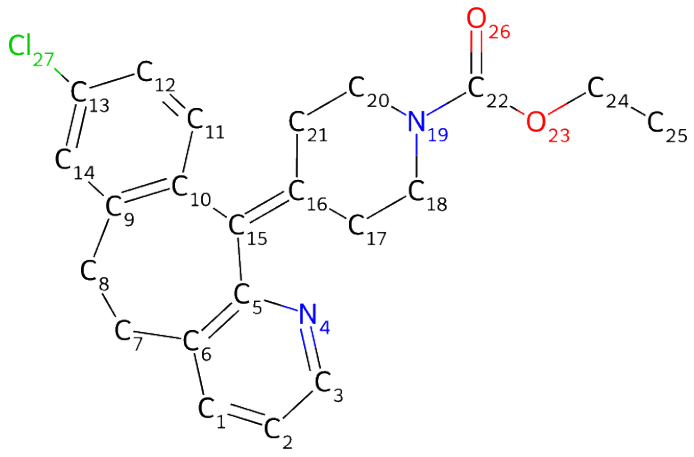
C-oxidation BDE Energy Report for: 187_loratadine-out

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for 187_loratadine-out. Oxidation propensity is established using C-H BDE. The lower the C-H BDE values the higher the propensity for C-oxidation. Details for the density functional theory (DFT) calculations and overall workflow are explained at the end of this document.

BDE and SASA

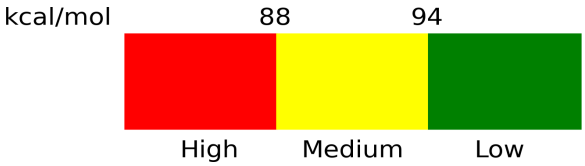


Atom	BDE (kcal/mol)	Propensity	SASA (Å²)
C1	110.86	Low	7.64
C2	112.72	Low	0.38
C3	106.42	Low	7.64
C7	84.24	High	0.00
C8	85.1	High	2.39
C11	112.14	Low	0.01
C12	113.73	Low	0.00
C14	113.2	Low	0.00
C17	82.32	High	0.52
C18	92.66	Moderate	0.84
C20	92.37	Moderate	0.48
C21	81.17	High	1.15
C24	95.84	Low	60.49
C25	102.67	Low	0.00

Missing Sites:

None

Risk Scale:



Calculation Details

Conformational search calculations were performed only for the base ground state molecule. The lowest energy conformer was selected to generate radicals and run optimization DFT calculations. DFT calculations were performed using Gaussian with B3LYP level of theory and 6-31G(d,p) basis set. The BDE protocol was adapted from: *Lienard, P., Gavartin, J., Boccardi, G., & Meunier, M. (2015). Predicting drug substances autoxidation. Pharmaceutical research, 32, 300-310.*