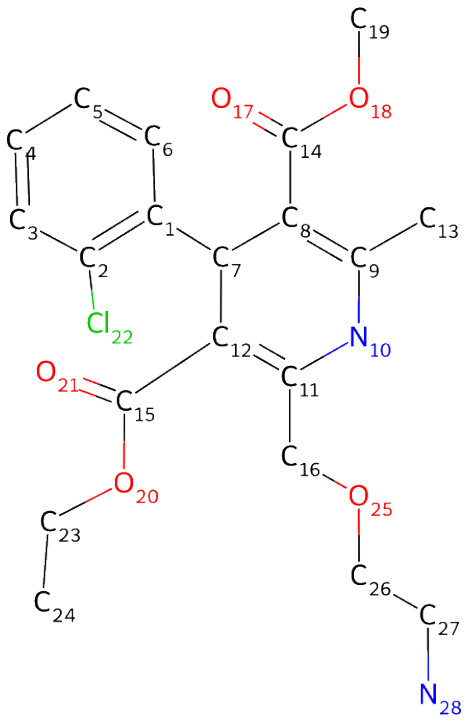
C-oxidation BDE Energy Report for: amlodipine

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for amlodipine. 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



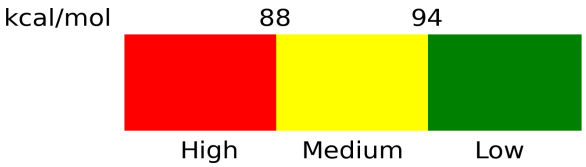
Atom	BDE (kcal/mol)	Propensity	SASA (Å²)
C3	112.82	Low	28.73
C4	112.43	Low	35.91
C5	112.42	Low	33.56
C6	110.91	Low	9.83
C7	77.58	High	7.25
C13	88.06	Moderate	25.43
C16	84.52	High	13.98
C19	97.88	Low	28.97
C23	94.92	Low	22.97
C24	102.63	Low	24.90

C26	94.81	Low	18.08
C27	92.63	Moderate	26.61

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.*