Electrostatic Properties of Two Precursors of Potent HIV-1 Integrase Inhibitors

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New AIDS therapy developments focus on the integrase inhibition in order to block the virus replication. Quinoline derivatives are potent drugs in this novel chemotherapy [1]. These molecules are formed by a quinoline moiety connected to a hydroxylated aromatic ring through a spacer fragment. This latter plays an important role in both inhibition and toxicity of the drugs. We have carried out the study of electrostatic properties of the two main precursors. These properties are derived experimentally from high-resolution X-ray diffraction experiments and from quantum mechanics calculations at Hartree-Fock level. The topological features of the electron density of precursors are carefully analyzed. The atomic charges and the electrostatic potential are discussed to highlight the correlation between the drug activity and the electronic structure.

[1] Zouhiri F., Mouscadet J.F., Mekouar K., Desmaële D., Savouré D., Leh H., Subra F., Le Bret M., Auclair C., d'Angelo J., *J. Med. Chem.*, 2000, **43**, 1533-1540.

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