Crystal Structures of Large-Volume Commercial Pharmaceuticals

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As part of a continuing project, the challenging room-temperature crystal structures of eight commercial pharmaceutical APIs have been solved by Monte Carlo simulated annealing techniques using synchrotron X-ray powder diffraction data (11-BM at APS), and optimized using density functional techniques. Tofacitinib dihydrogen citrate (Xeljanz®), (C15H21N6O)(H2C6H5O7), crystallizes in P212121 with a = 5.91113(1), b = 12.93131(3), c = 30.43499(7) Å, V = 2326.411(6) Å3, and Z = 4. All of the "interesting" hydrogn atoms could be located by analysis of potential hydrogen bonding patterns. Eltrombopag olamine Form I (Promacta®), (C2H8NO)2(C25H20N4O4) crystallizes in P21/n with a = 17.65884(13), b = 7.55980(2), c = 22.02908(16) Å, β = 105.8749(4)°, V = 2828.665(11) Å3, and Z = 4. The initial structure solution reversed the orientation of one of the cations. Levocetirizine hydrochloride Form I (Zyzal), C21H27ClN2O3Cl, apparently crystallizes in P21/n (even though it is a chiral molecule and exhibits weak second-harmonic generation) with a = 24.1318(21), b = 7.07606(9), c = 13.5205(7), β = 97.9803(4)°, V = 2286.38(12) Å3, and Z = 4. Edoxaban tosylate monohydrate Form I (Lixiana®), (C24H31ClN7O4S)(C7H7O3S)(H2O), crystallizes in P21 with a = 7.55097(2), b = 7.09010(2), c = 32.08420(21) Å, β = 96.6720(3)°, V = 1744.348(6) Å3, and Z = 2. Tezacaftor Form A (Symdeko), C26H27F3N2O6, crystallizes in C2 with a = 21.05142(2), b = 6.60851(2), c = 17.76032(5) Å, β = 95.8255(2)°, V = 2458.027(7) Å3, and Z = 4. Pomalidomide Form I (Pomalyst), C13H11N3O4, crystallizes in P-1 with a = 7.04742(9), b = 7.89103(27), c = 11.3106(6) Å, α = 73.2499(13), β = 80.9198(9), γ = 88.5969(6)°, V = 594.618(8) Å3, and Z = 2. Palbociclib isethionate Form B (Ibrance®), (C24H30N7O2)(C2H5O4S), crystallizes in P-1 with a = 8.71337(4), b = 9.32120(6), c = 17.73722(20) Å, α = 80.0258(5), β = 82.3581(3), γ = 76.1560(2)°, V = 1371.284(5) Å3, and Z = 2. Osimertinib mesylate Form B (Tagrisso), (C28H34N7O2)(CH3O3S) crystallizes in P-1 with a = 11.4291(3), b = 11.7223(4), c = 13.3221(4), α = 69.0246(8), β = 74.5906(7), γ = 66.4001(7)°, V = 1511.466(13) Å3, and Z = 2. Other new structures may be discussed as they become available.