Efficient Synthesis of Deuterium-Labelled Ganciclovir-d_5 and Its Prodrug Valganciclovir-d_5

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Abstract—An efficient protocol has been developed for the synthesis of deuterium labeled ganciclovir-d_5, a potent anti-cytomegalovirus agent and its prodrug, valganciclovir-d_5, by using inexpensive and commercially available glycerol-d_5 reagent. Structure and purity of the synthesized compounds are confirmed by ^{1}H NMR and MS spectral data. The deuterium incorporation in ganciclovir-d_5 and its prodrug was >98% which resembles the reported earlier deuterium abundance in the labeled starting material (glycerol-d_5, >98% atom D). The results indicate that there is no loss of deuterium by exchange in the course of synthesis. Hence, these molecules can be used as standards in bio-analytical studies.

Keywords: ganciclovir-d_5, valganciclovir-d_5, anti-cytomegalovirus, synthesis

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