Enzymatic synthesis of TDP-4-amino-4,6-dideoxyglucose using GerB, B6-dependent enzyme from the dihydrocharcomycin producer, *Streptomyces sp.* Geri-155

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B_6-dependent enzyme (GerB) from *Streptomyces sp.* GERI-155 was expressed and transformed into pET28a and *E. coli* BL21 (DE 3) respectively, and applied to the synthesis of TDP-4-amino-4,6-dideoxyglucose from TDP-4-keto-6-deoxy-glucose. TDP-4-amino-4,6-dideoxyglucose was also synthesized from the one-pot reaction of GerB and other enzymes with TMP and glucose-1-phosphate, and purified by two preparative HPLC systems. Product was firstly identified by HPLC and then the successive analyses of ^{1}H, ^{13}C, ^{1}H-^{1}H COSY-NMR using purified product. Since the TDP-4-amino-4,6-dideoxyglucose is one of the TDP-activated deoxyhexoses, it can be utilized widely as a donor substrate of glycosyltransferases to the biosynthetic pathways of polyketide antibiotics for the possible improved antibiotic materials.