Computational study for the unbinding routes of  $\beta$ -N-Acetyl-D-hexosaminidase inhibitor: insight from steered molecular dynamics simulations

Song Hu, Xiao Zhao, Li Zhang\*

Department of Applied Chemistry, College of Science, China Agricultural University, Beijing, China

Corresponding Authors\* E-mail: zhang\_li@cau.edu.cn

Contents:

**Figure S1.** (a) The binding pocket of OfHex1. (b) The structure of TMG-chitotriomycin.

**Figure S2.** The distance between O4 atom of the ligand and NE1 atom of the receptor versus time. CMD1 in black, CMD2 in red, CMD3 in blue.

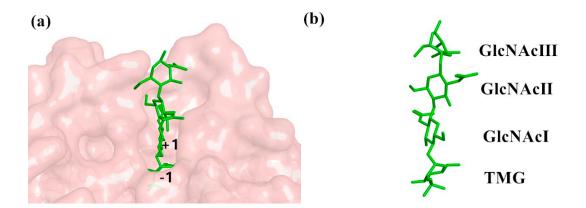
**Figure S3.** Root-mean-square deviation (RMSD) variation of ligand with respect to simulation time. CMD1 in black, CMD2 in red, CMD3 in blue.

**Figure S4.** Root-mean-square deviation (RMSD) variation of receptor with respect to simulation time. CMD1 in black, CMD2 in red, CMD3 in blue.

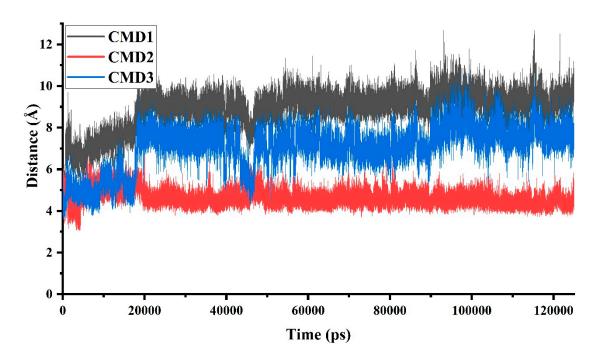
**Figure S5.** Structure comparison of two loops for the conversional MDs (a) CMD1 (yellow), (b) CMD2 (pink) and (c) CMD3 (red) with the crystal structure (blue).

**Figure S6.** Dissociation routes of TMG-chitotriomycin from OfHex1 identified clustered by CAVER from 100 snapshots of the last 5ns.

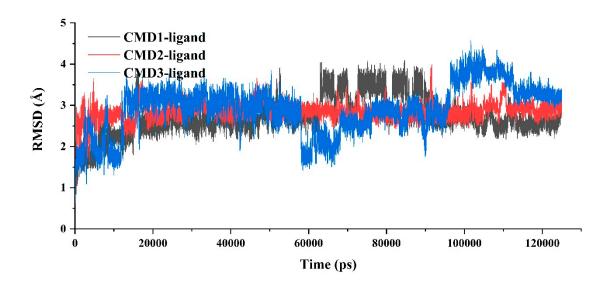
**Figure S7.** The average work versus the distance of ligand dissociation from the receptor



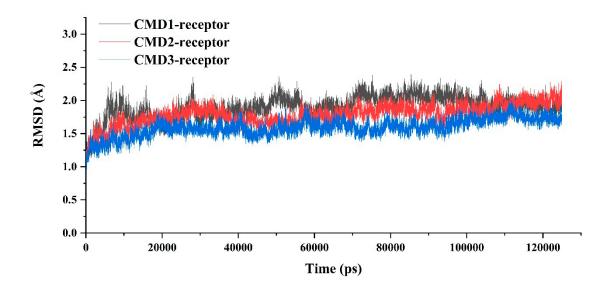
**Figure S1**. (a) The binding pocket of OfHex1. (b) The structure of TMG-chitotriomycin.



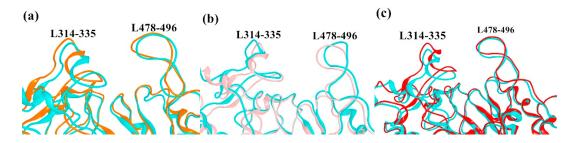
**Figure S2.** The distance between O4 atom of the ligand and NE1 atom of the receptor versus time. CMD1 in black, CMD2 in red, CMD3 in blue.



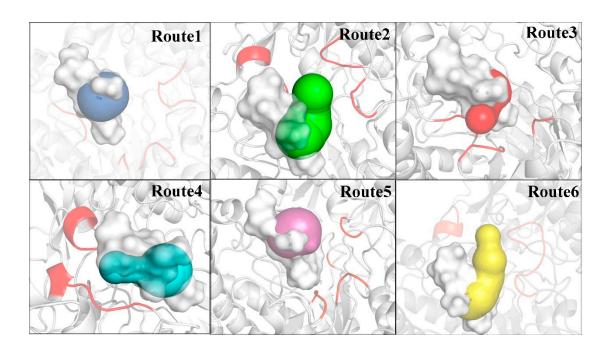
**Figure S3.** Root-mean-square deviation (RMSD) variation of ligand with respect to simulation time. CMD1 in black, CMD2 in red, CMD3 in blue.



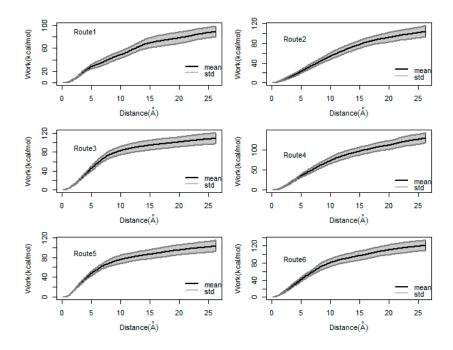
**Figure S4.** Root-mean-square deviation (RMSD) variation of receptor with respect to simulation time. CMD1 in black, CMD2 in red, CMD3 in blue.



**Figure S5.** Structure comparison of two loops for the conversional MDs (a) CMD1 (yellow), (b) CMD2 (pink) and (c) CMD3 (red) with the crystal structure (blue).



**Figure S6.** Dissociation routes of TMG-chitotriomycin from OfHex1 clustered by CAVER from 100 snapshots of the last 5ns.



**Figure S7.** The average work versus the distance of ligand dissociation from the receptor