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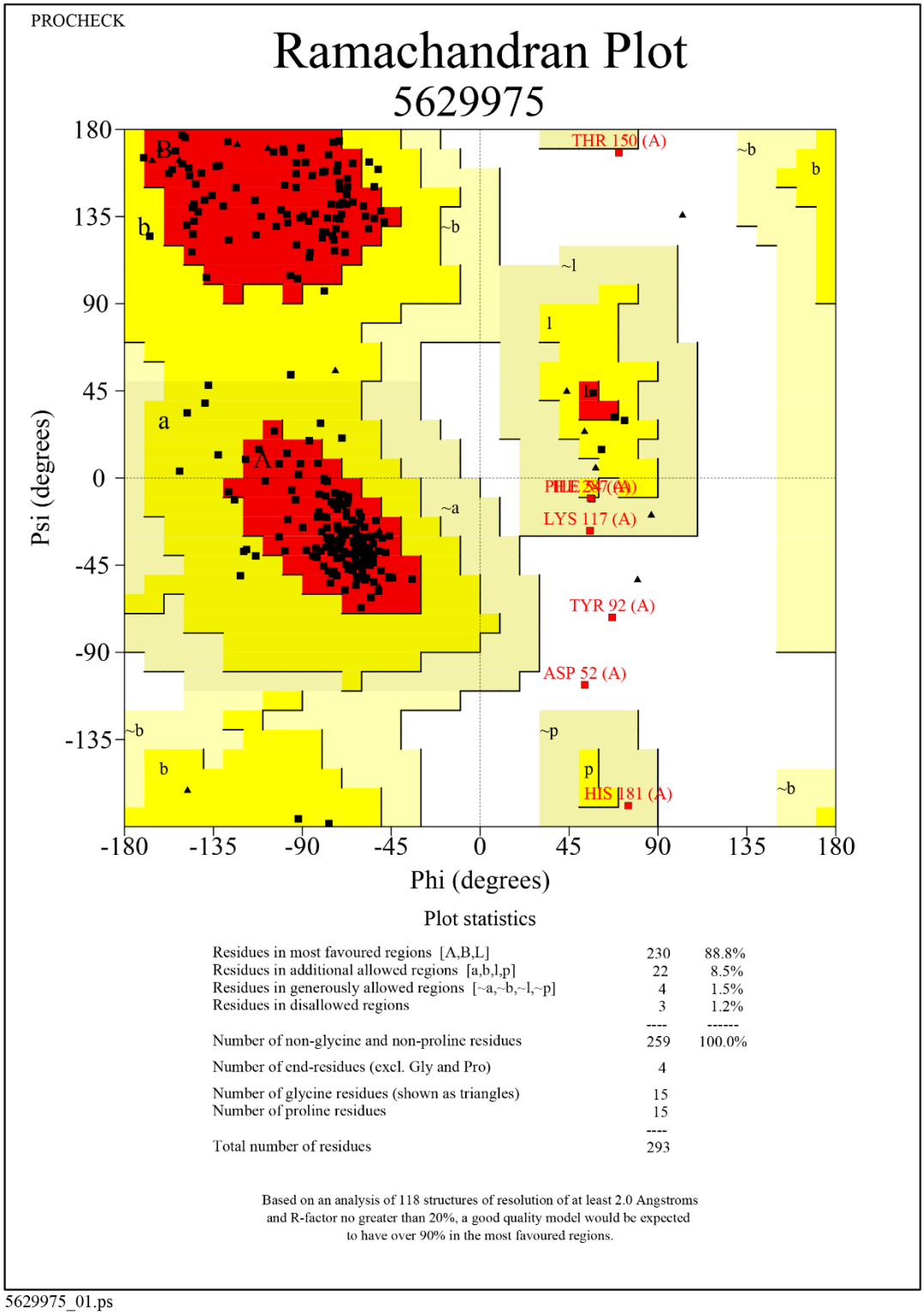
Supplementary Materials

Characterization of the Specific Mode of Action of a Chitin Deacetylase and Separation of the Partially Acetylated Chitosan Oligosaccharides

Xian-Yu Zhu [1,2], Yong Zhao [1], Huai-Dong Zhang [1,3], Wen-Xia Wang [1], Hai-Hua Cong [2] and Heng Yin [1,*]

[1] Liaoning Provincial Key Laboratory of Carbohydrates, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China; zhuxy0721@126.com (X.-Y.Z.); zhaoyong_2019@163.com (Y.Z.); huaidongzhang@yahoo.com (H.-D.Z.); wangwx@dicp.ac.cn (W.-X.W.)
[2] College of Food Science and Engineering, Dalian Ocean University, Dalian 116023, China; haihuacong780@gmail.com
[3] Engineering Research Center of Industrial Microbiology, Ministry of Education; College of Life Sciences, Fujian Normal University, Fujian 350117, China
* Correspondence: yinheng@dicp.ac.cn; Tel./Fax: +86-0411-84379061



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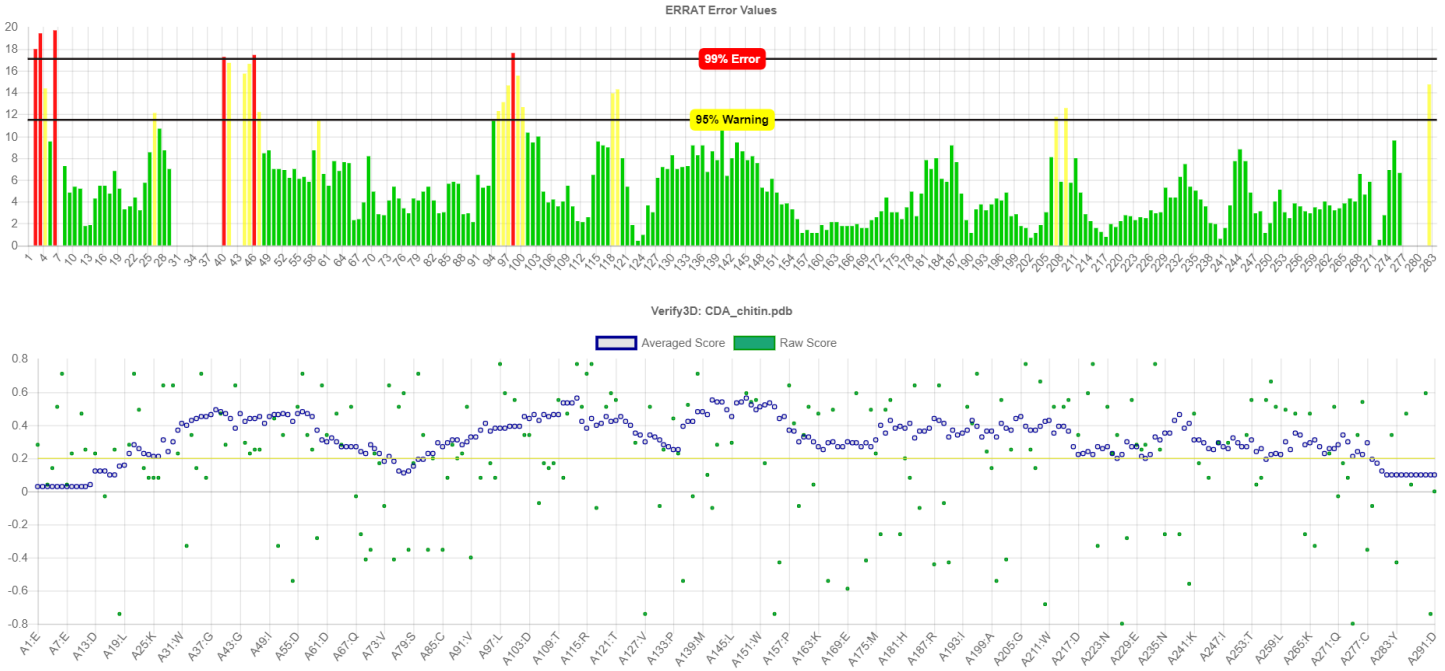

Figure S1. The model was further evaluated for protein geometry by SAVES (A comprehensive measurement website for the quality of a protein structure). 97.3% Residues in additional allowed regions and 85.57% of the residues have averaged 3D-1D score ≥ 0.2, and the quality factor is 91.2214**.**

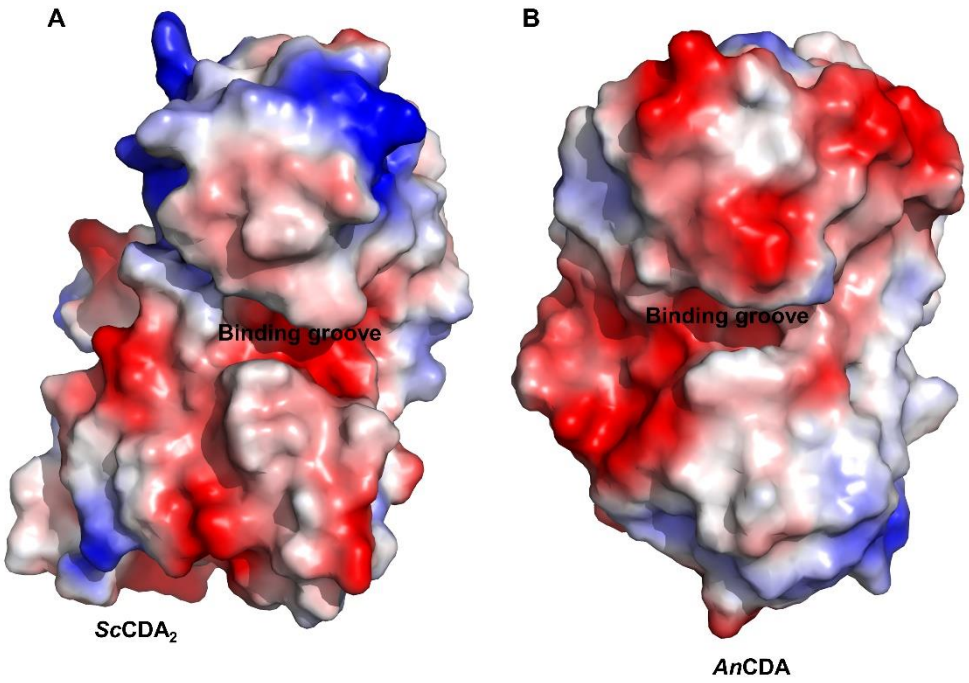

Figure S2. Compare deacetylase charge distribution. These pictures show the surface charge distributions of chitin deacetylase from *Saccharomyces cerevisiae* (*Sc*CDA2) and chitin deacetylase from *Aspergillus Nidulans* (*An*CDA, PDB ID: 2Y8U) calculated using ABPS (The Adaptive Poisson-Boltzmann Solver to generate electrostatic surface displayed) in VMD. Red represents a negative charge and blue represents a positive charge.

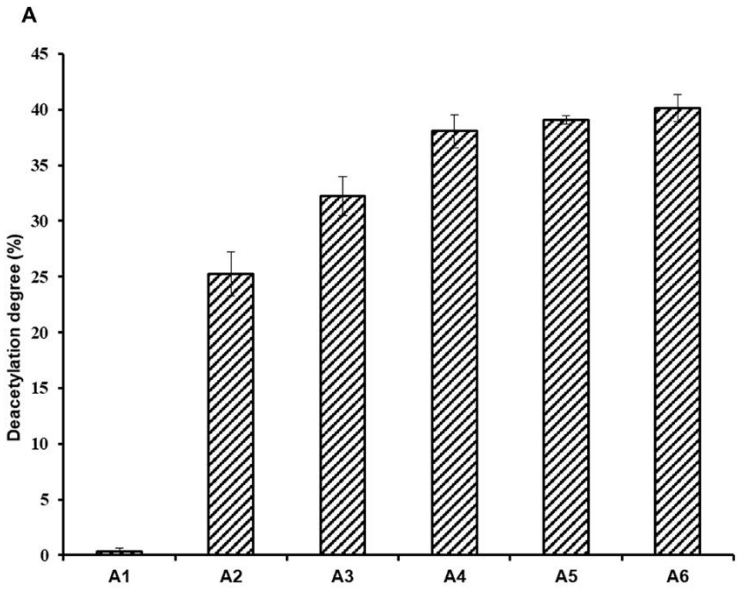

Figure S3. *Sc*CDA2 substrate specificity on chitin oligomers. 0.5mg/ml chitin oligomers as substrates were incubated with 0. 75 μM *Sc*CDA2 at 37 °C for 30 min. The data represents the mean SD values of the results from three independent experiments.

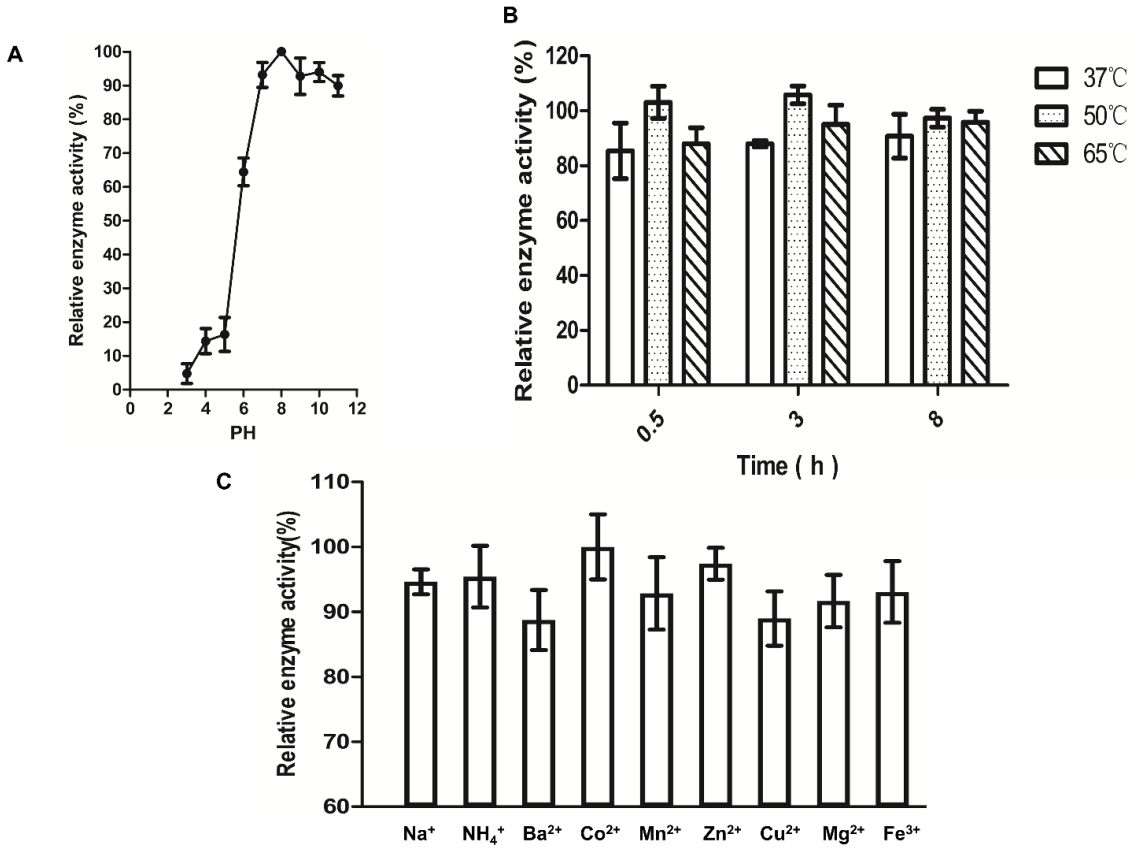

Figure S4. Effects of pH, temperature and metal ion on enzyme activity. (**A**) The optimum pH was determined by incubating the 0.75μM *Sc*CDA2 with A4 chitin oligomer (0.5 mg/mL) for 60 min at pH 3–11 in universal buffer. (**B**) To obtain the optimal temperature, the enzyme (075 μmol) was incubated for 60 min at different temperatures in 50mM Tris-HCl buffer (pH 8.0) containing chitin oligomer mixture (0.5 mg/mL) as a substrate. (**C**) Relative activity with different metal cations. Proteins were incubated with 1 mm metallized cations, and activity was determined in 50 mM Tris-HCl buffer (pH 8.0) using 0.5 mg/mL A4 as a substrate.

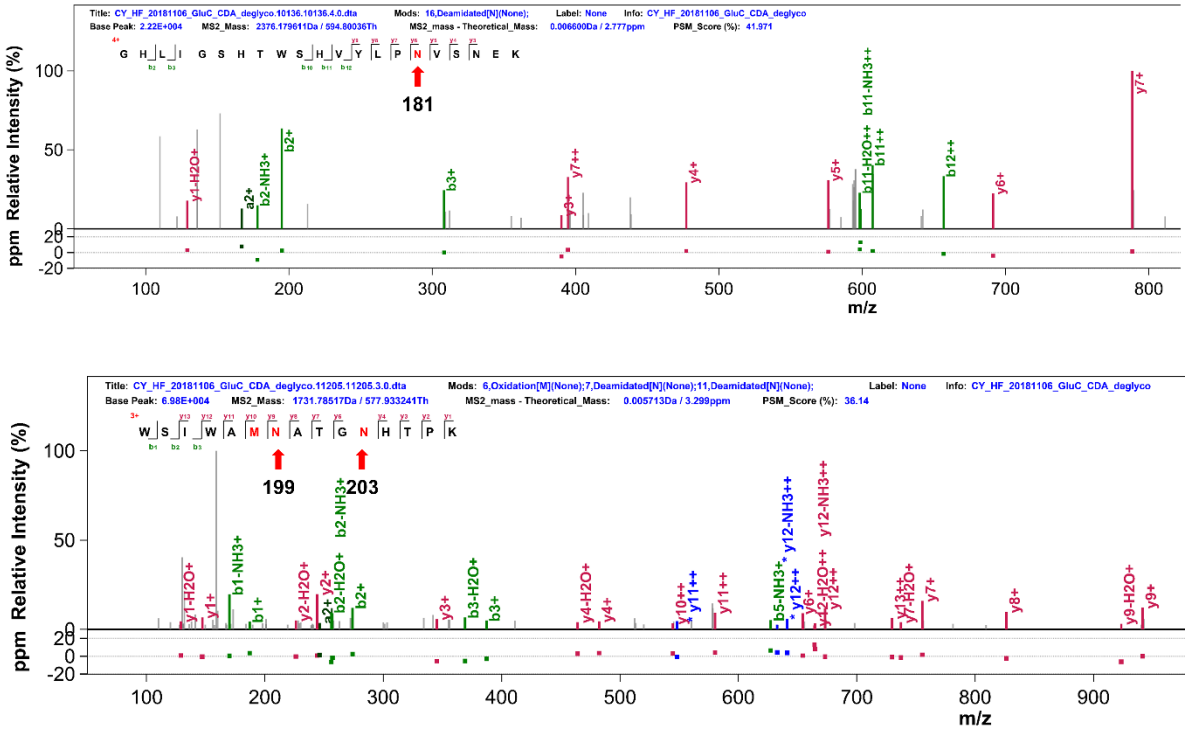

Figure S5. Spectra of N-glycosylation of *Sc*CDA2. Mass spectrometry showed that *Sc*CDA2 have N-glycosylation post-translational modification at Asn 181, Asn 199 and Asn 203.