

Supporting Information

Synthesis, Characterization and Antifungal Activities of Amphiphilic Derivatives of Diethylaminoethyl-Chitosan Against *Aspergillus flavus*

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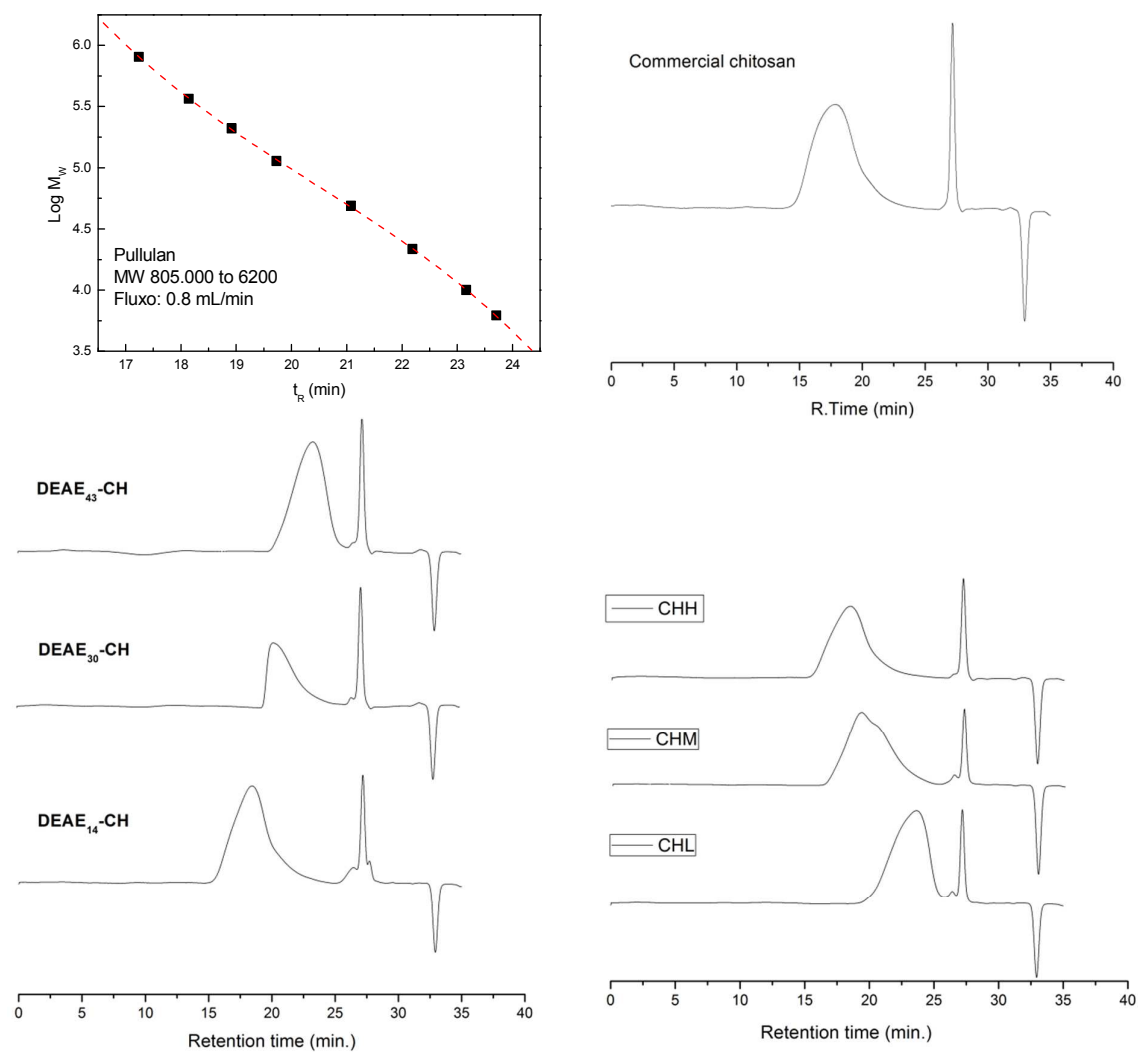


Figure S1. Calibration curve and gel permeation chromatograms of commercial chitosan, DEAE₄₃, DEAE₃₀ and DEAE₁₄ and their parent deacetylated chitosans of high, medium and low molecular weights (CH_H, CH_M, CH_L respectively).

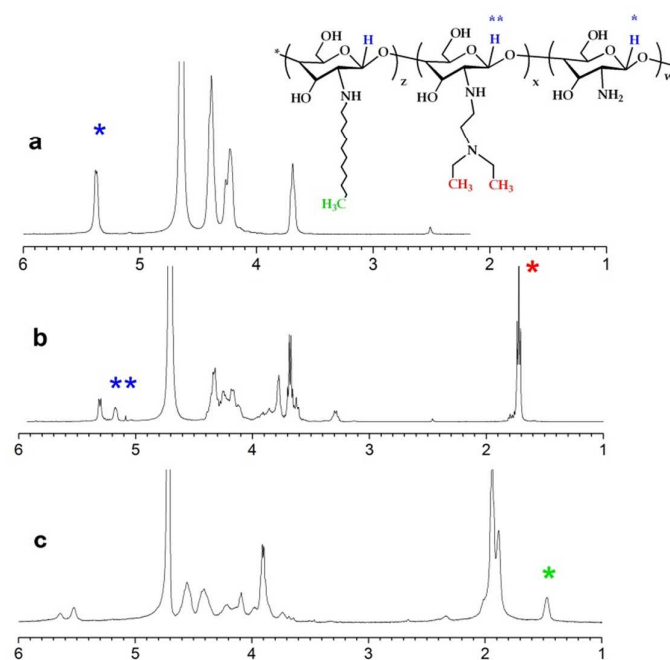


Figure S2. ^1H NMR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan in $\text{D}_2\text{O}/\text{DCI}$ at 70°C : **a)** CH_H ; **b)** DEAE_{43} and **c)** $\text{DEAE}_{43}\text{-CH-Dod}_{30}$. The colors indicate the signals used to determine the degrees of substitution for DEAE and dodecyl.

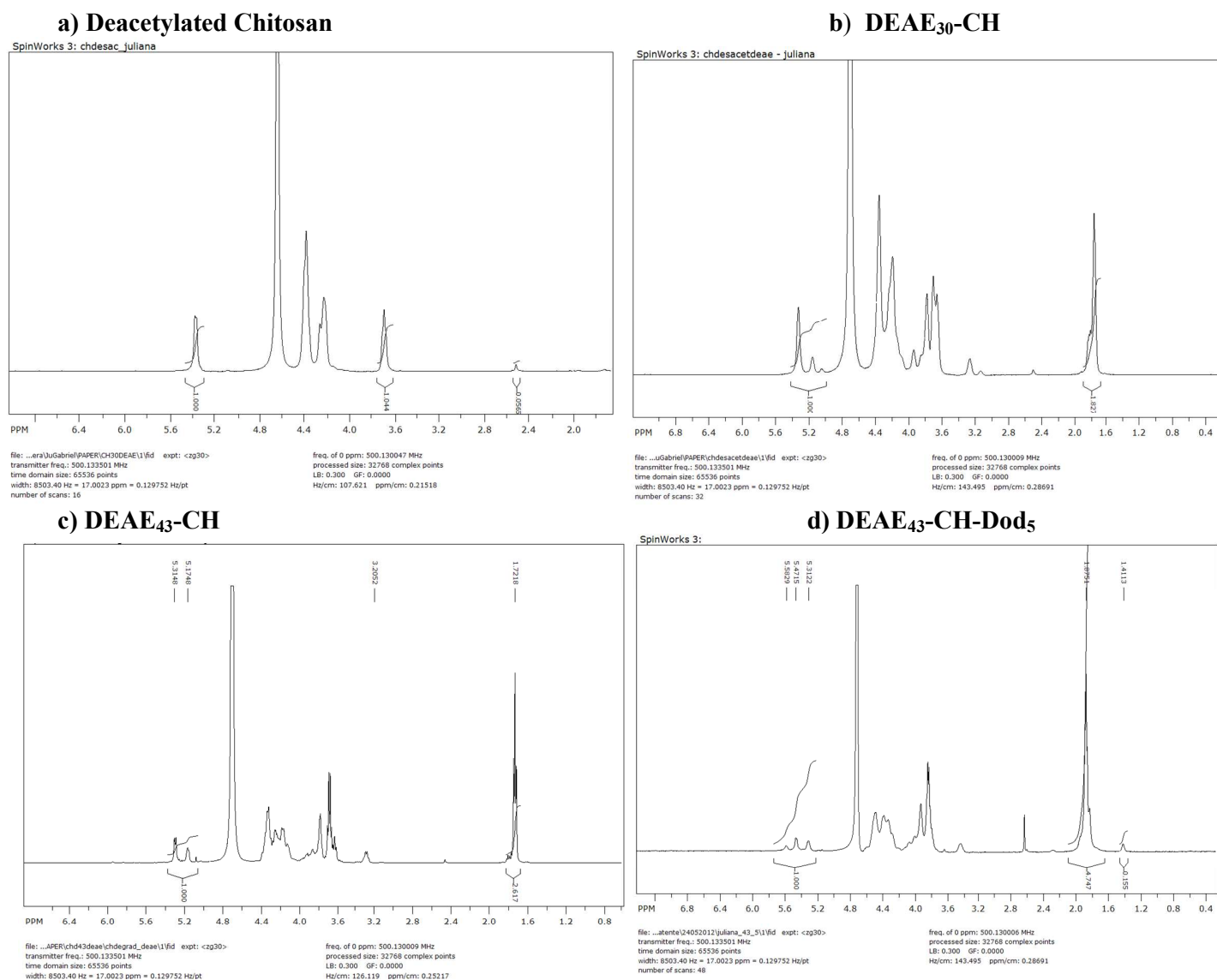


Figure S3. ^1H NMR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan in $\text{D}_2\text{O}/\text{DCI}$ at 70°C : **a)** Deacetylated chitosan; **b)** DEAE₃₀-CH and **c)** DEAE₄₃-CH, **d)** DEAE₄₃-CH-Dod₅ .

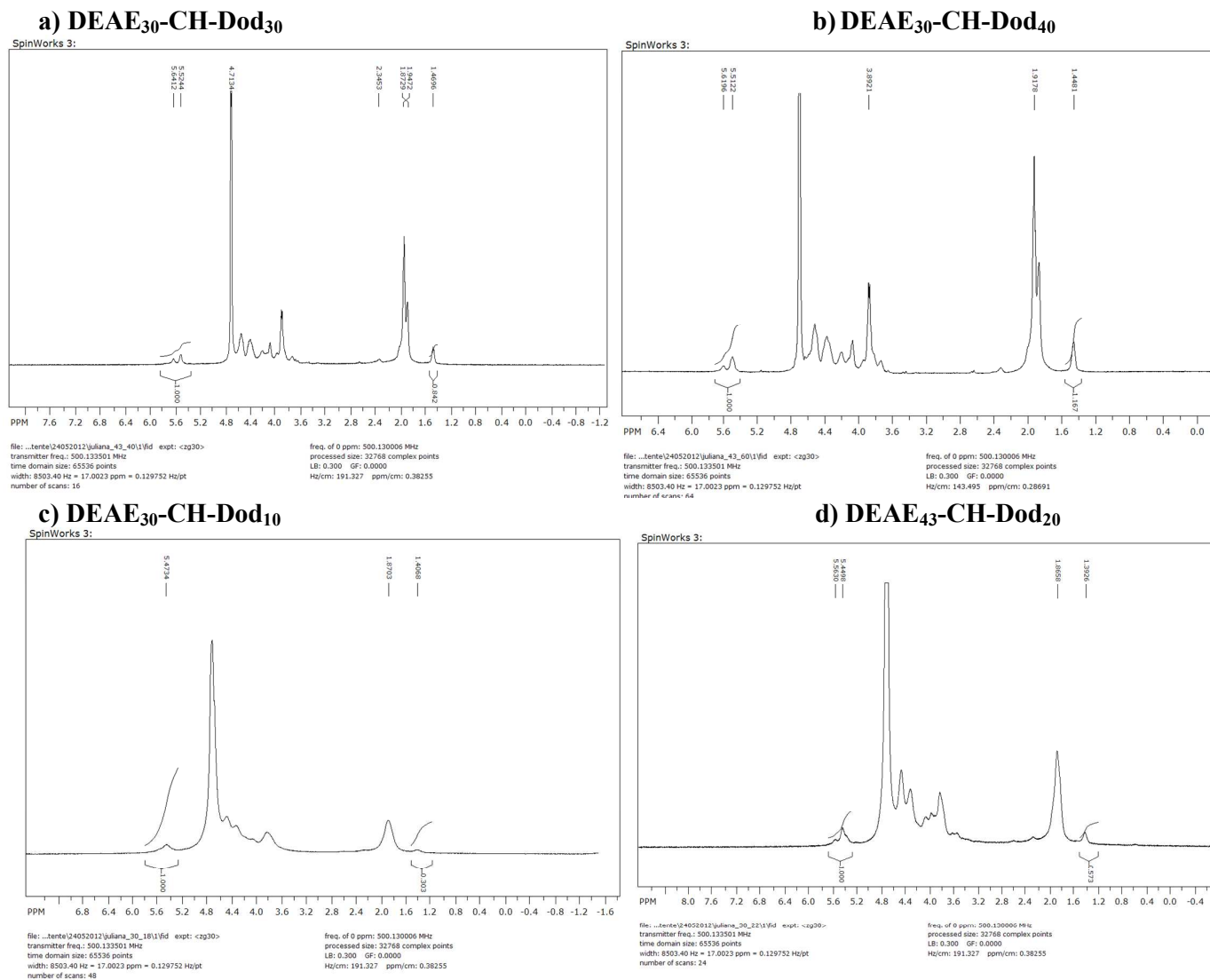


Figure S4. ^1H NMR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan in $\text{D}_2\text{O}/\text{DCl}$ at 70°C : **a)** DEAE₄₃-CH-Dod₃₀; **b)** DEAE₄₃-CH-Dod₄₀ and **c)** DEAE₃₀-CH-Dod₁₀, **d)** DEAE₃₀-CH-Dod₂₀

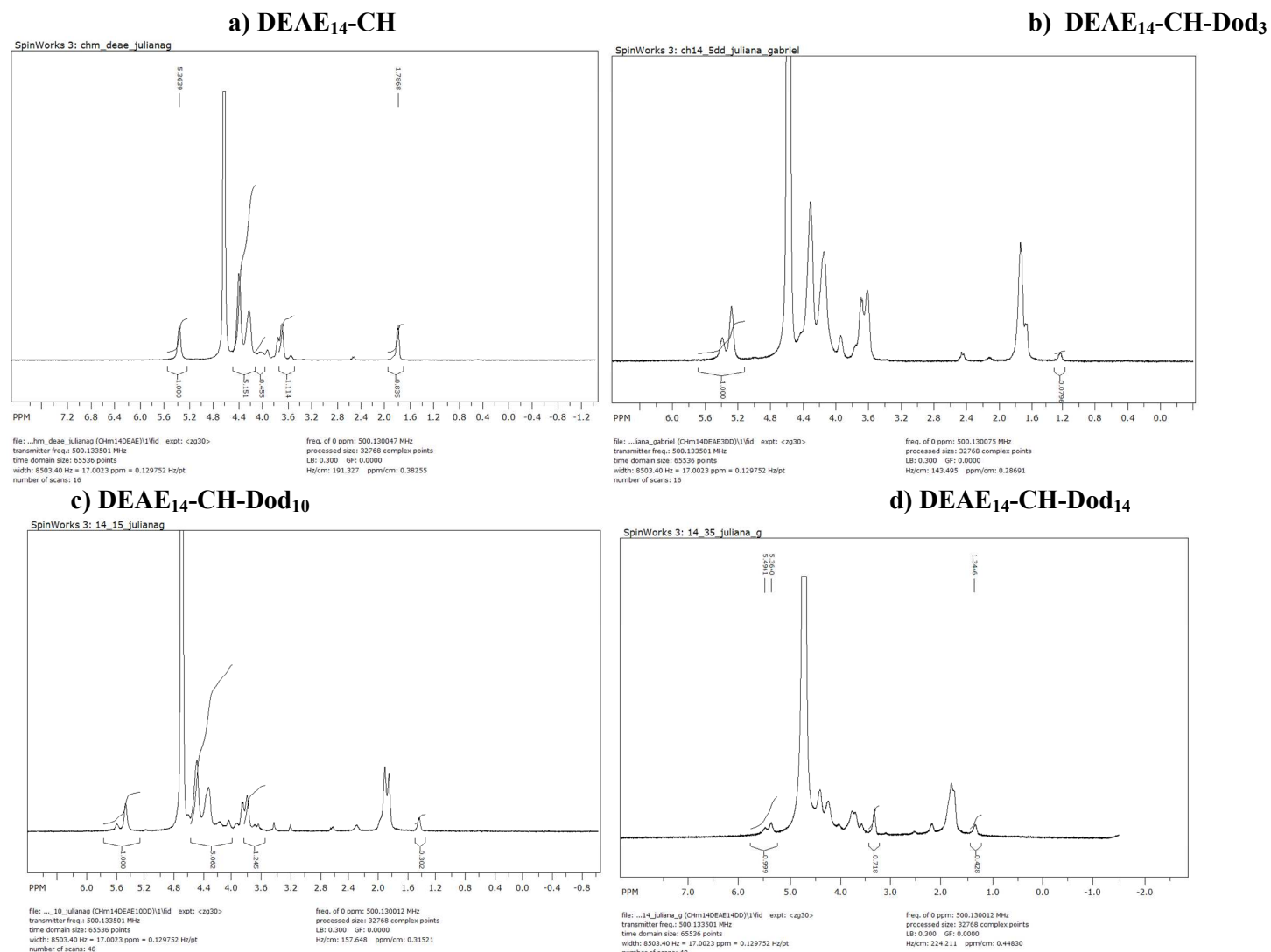


Figure S5. ¹H NMR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan in D₂O/DCl at 70°C: **a)** DEAE₁₄-CH ; **b)** DEAE₁₄-CH-Dod₃ ; **c)** DEAE₁₄-CH-Dod₁₀ and **d)** DEAE₁₄-CH-Dod₁₄

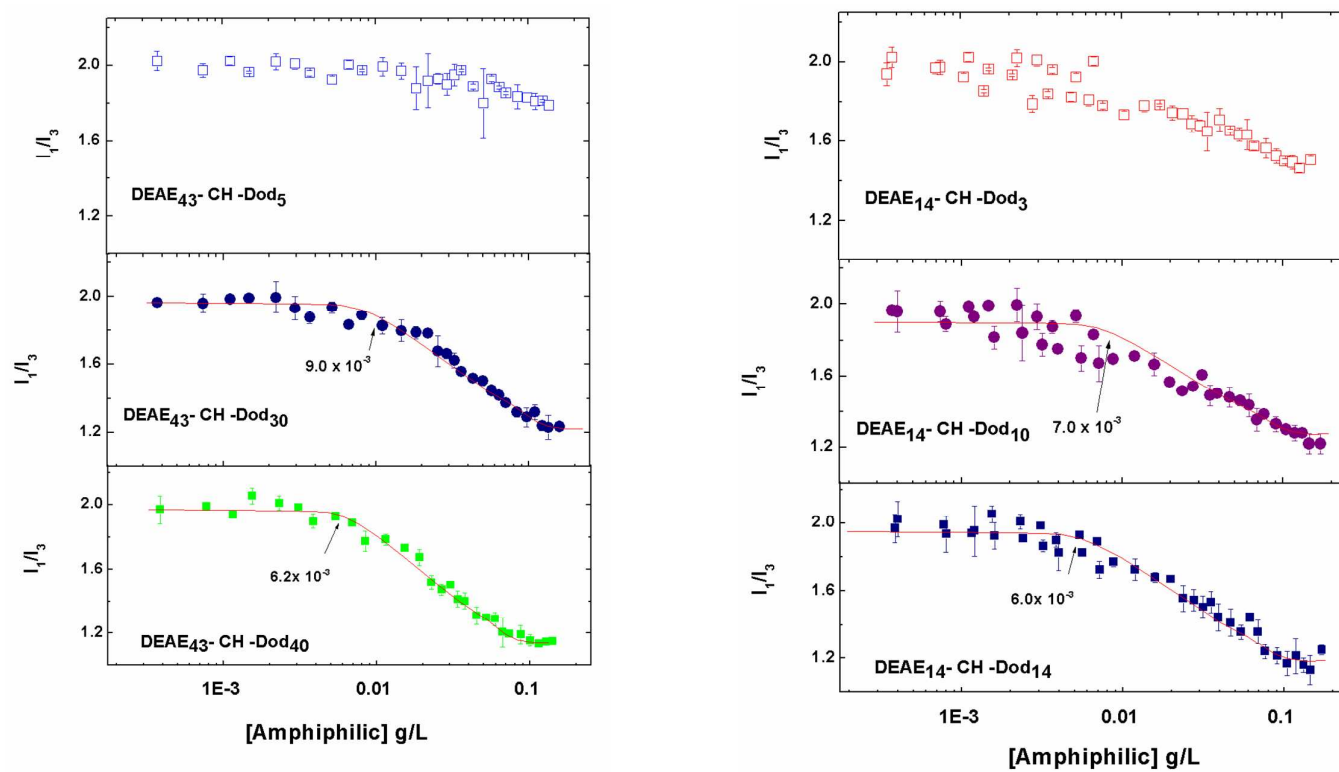


Figure S6. I_1/I_3 ratios vs. DEAE₄₃-CH- Dod_x and DEAE₁₄-CH- Dod_x concentration at pH 5.0.

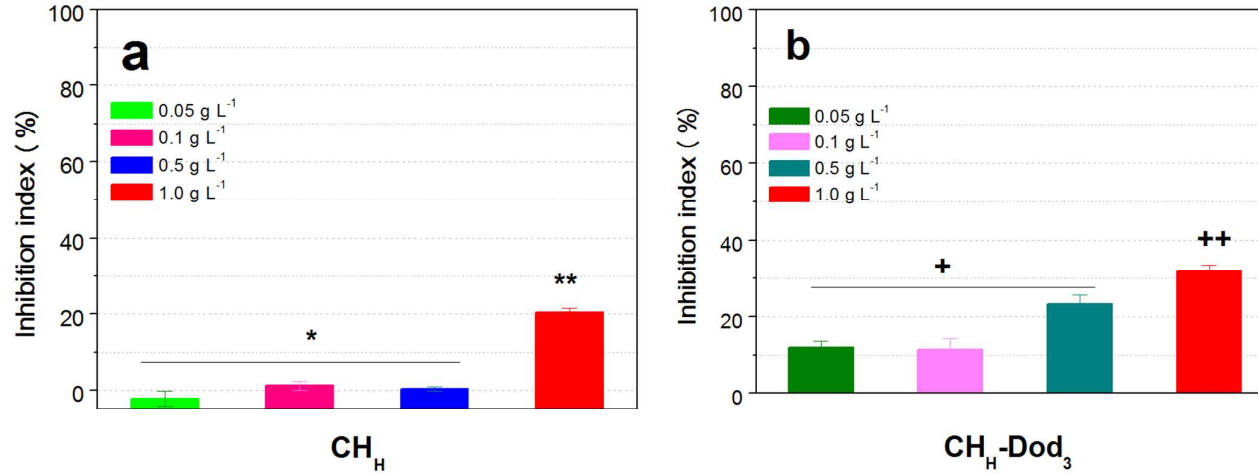


Figure S7. Inhibition of the *in vitro* growth of *A. parasiticus* in the presence of various concentrations of (a) CH_H and CH_H -Dod₃. Vertical bars with different symbols at the same concentration are significantly different according to the Kruskal-Wallis test ($P < 0.05$).

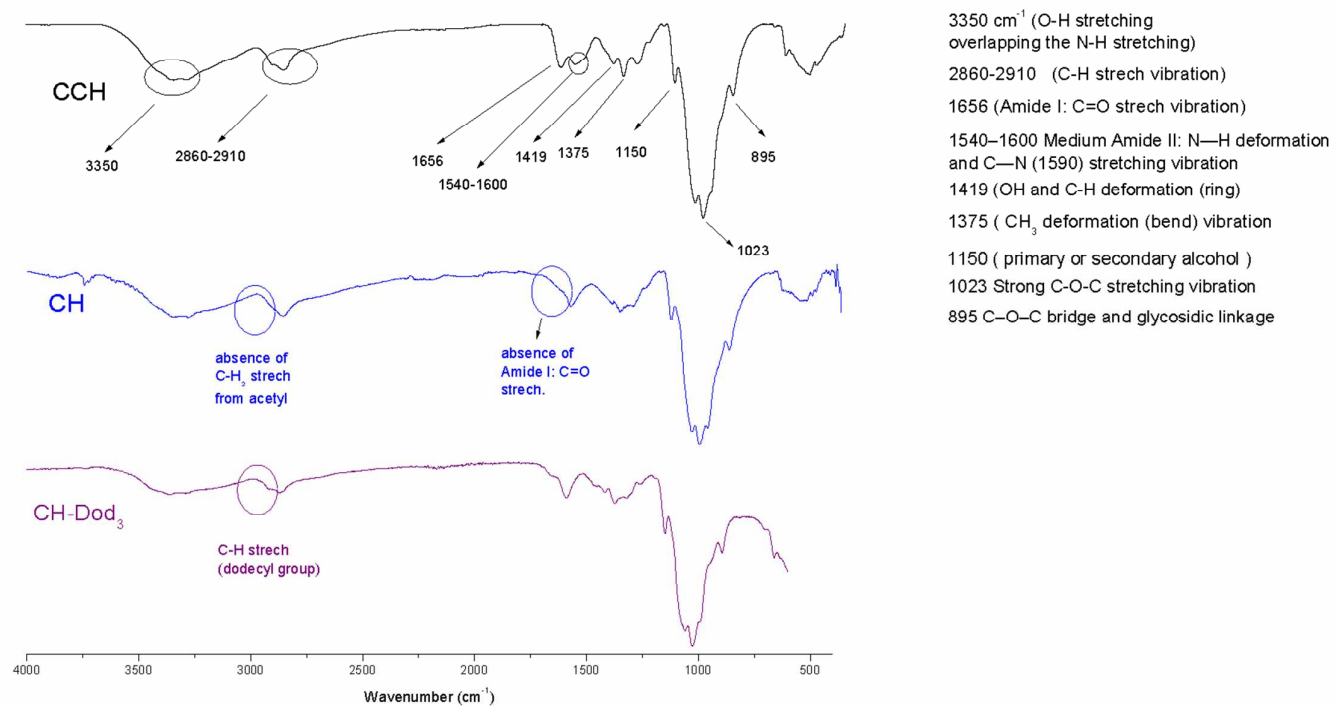


Figure S8. IR spectra of commercial (CCH), deacetylated (CH) and dodecylated chitosans.

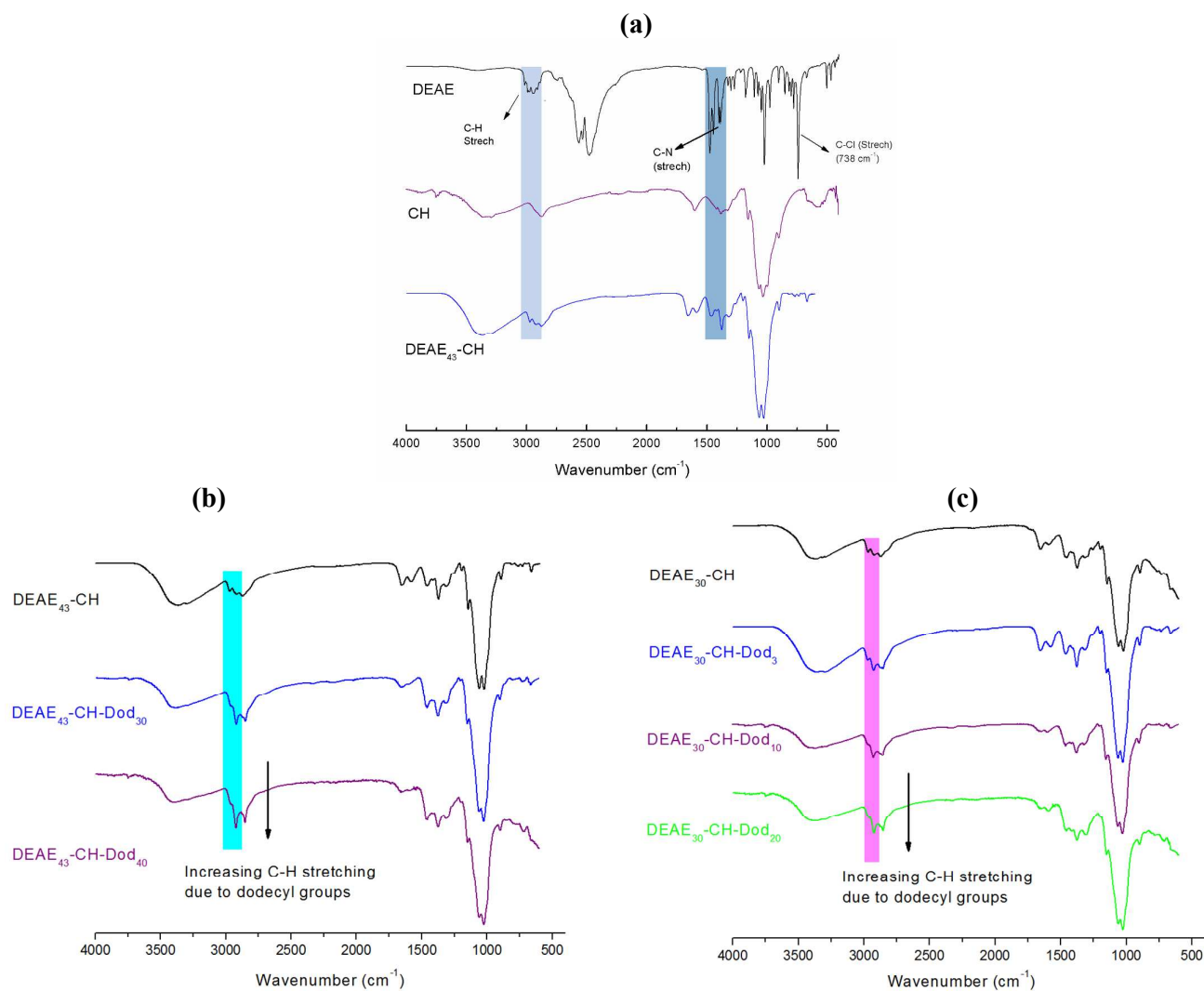


Figure S9. (a) IR spectra of DEAE, deacetylated chitosan (CH) and DEAE₄₃-CH derivative; (b) IR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan DEAE₄₃-CH, DEAE₄₃-CH-Dod₃₀ and DEAE₄₃-CH-Dod₄₀ ; (c) IR spectra of the following amphiphilic derivatives of diethylaminoethyl chitosan DEAE₃₀-CH, DEAE₃₀-CH-Dod₃, DEAE₃₀-CH-Dod₁₀ and DEAE₃₀-CH-Dod₂₀