Supporting Information

# Distinguishing the effect on the rate and yield of Aβ42 aggregation by green tea polyphenol EGCG

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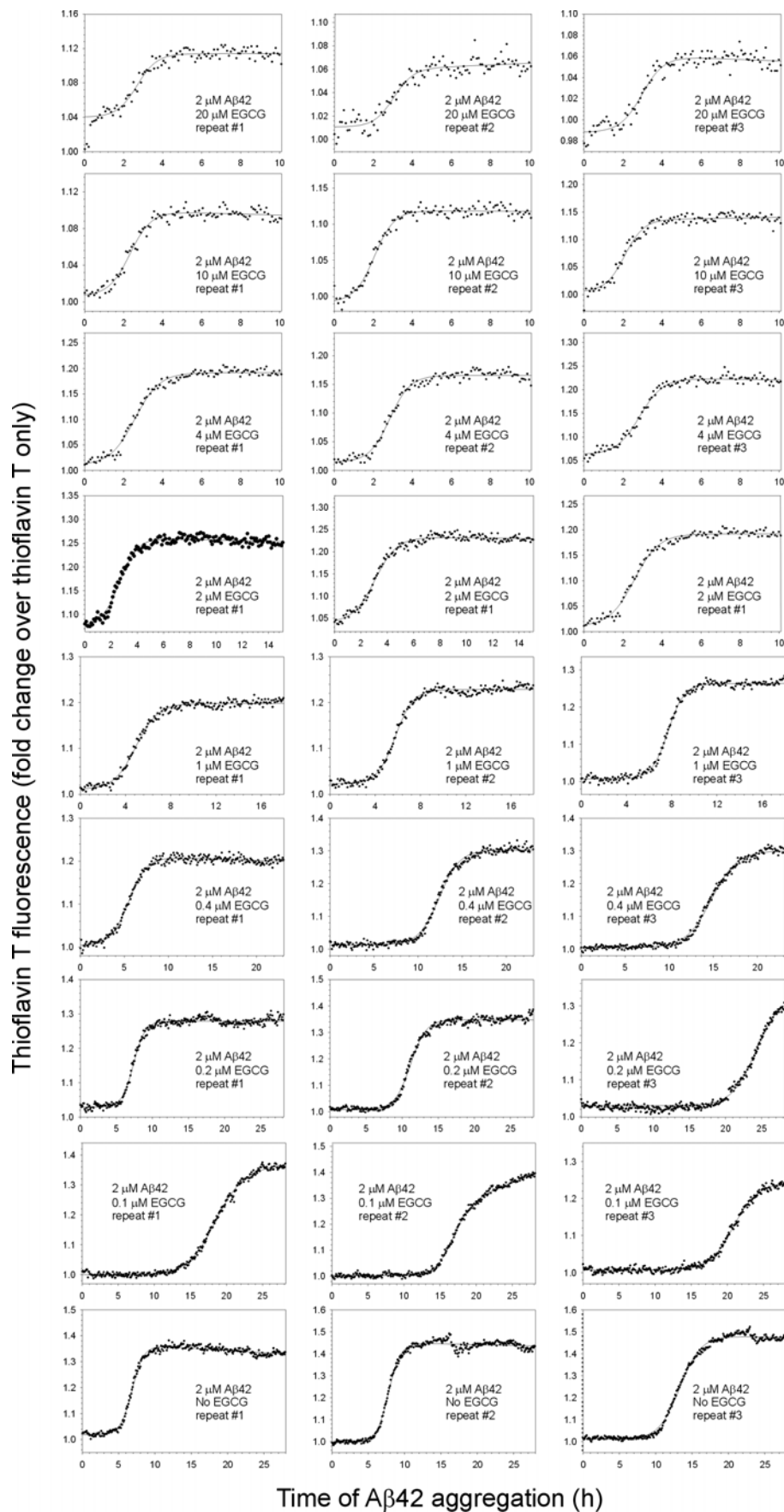
Figure S1. Data and sigmoidal fits for fibrillization kinetics of Aβ42 samples in the absence and presence of EGCG. The symbols are data points and the solid lines are best fits to a sigmoidal function (see Methods).
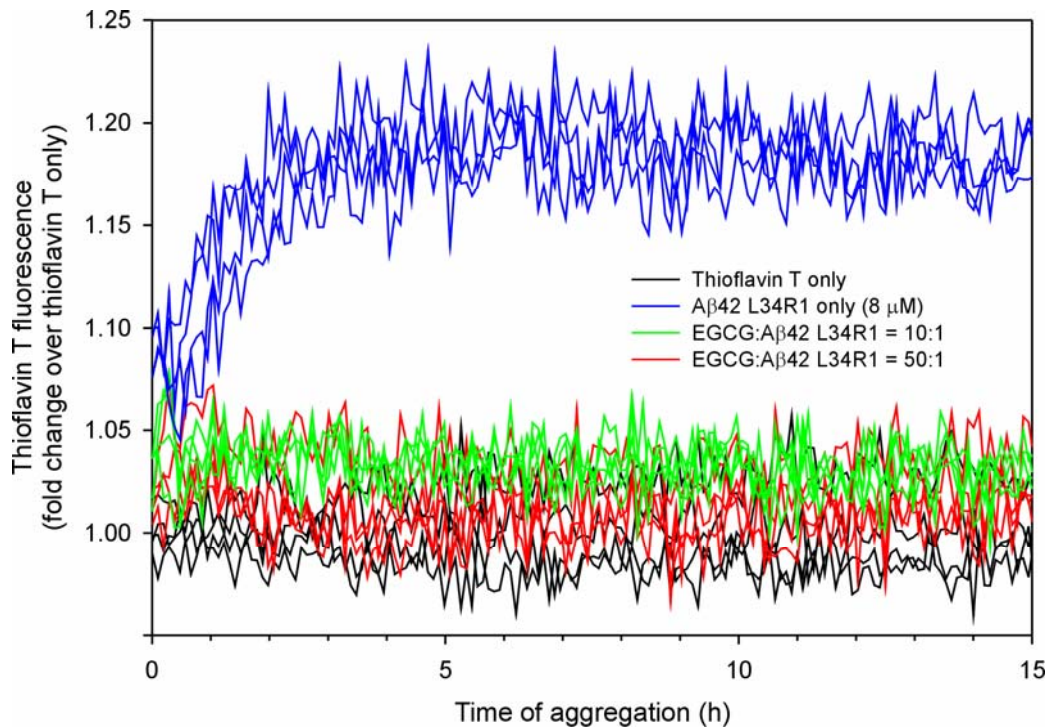
Figure S2. Aggregation of Aβ42 spin-labeled at position 34 in the absence and presence of EGCG.
The aggregation was initiated by 20-fold dilution from a denaturing buffer (20 mM CAPS, 7 M guanidine hydrochloride, pH 11) to either PBS or PBS containing EGCG. The final Aβ concentration is 8 µM after dilution. The aggregation was performed at 37°C without agitation. R1 represents the spin label.
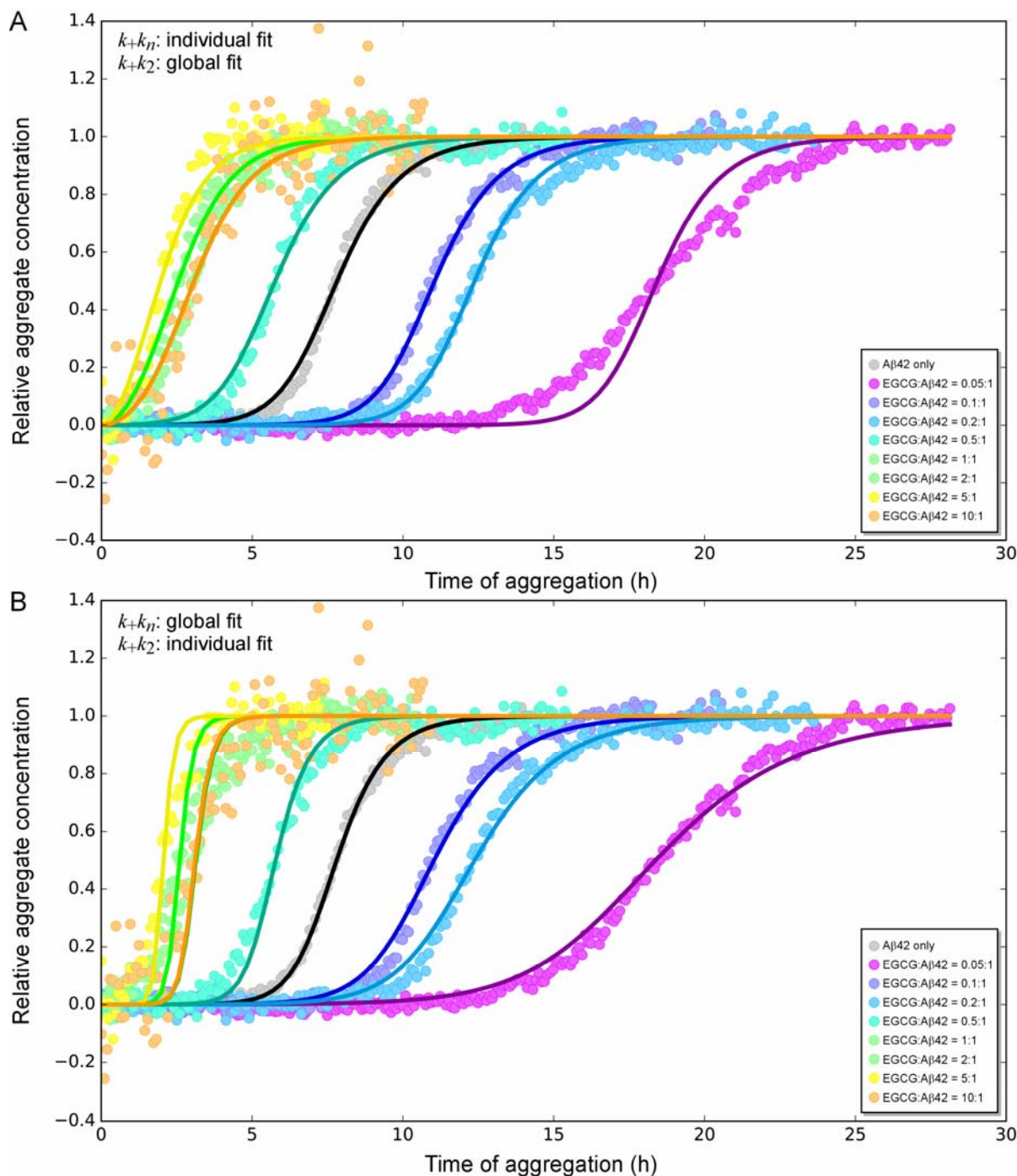
Figure S3. Fitting of the aggregation data from Figure 2A using a mechanism that includes both primary and secondary nucleation processes. The fitting was performed using the AmyloFit server[1]. Aggregation data of Aβ42 in the absence and presence of various molar ratios of EGCG were first normalized and then fitted using the mechanism with secondary nucleation[2,3]. The purpose of the fitting is to see if the data can be fitted by varying only one microscopic process (i.e., either primary or secondary nucleation). If so, the effect of EGCG can be rationalized by assuming that EGCG affects the corresponding process. For clarity, only one technical repeat of each EGCG concentration is shown. When fitting primary nucleation individually and secondary nucleation globally (*A*), the aggregation data of EGCG to Aβ42 ratio of 0.05:1 couldn't be fitted well. On the other hand, when fitting secondary nucleation individually and primary nucleation globally (*B*), the aggregation data at high EGCG to Aβ42 ratios (1:1 to 10:1) could not be fitted well. These results suggest that EGCG may act through different mechanisms at high versus low concentrations. For panel A, the global parameters are $k_+k_2 = 8.99 \times 10^{16}$ M^{-3} h^{-2}; $n_c = n_2 = 2$. For panel *B*, the global parameters are $k_+k_n = 4.61 \times 10^6$ M^{-2} h^{-2}, $n_c = n_2 = 2$.

References

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(2) Cohen, S. I. A.; Linse, S.; Luheshi, L. M.; Hellstrand, E.; White, D. A.; Rajah, L.; Otzen, D. E.; Vendruscolo, M.; Dobson, C. M.; Knowles, T. P. J. Proliferation of Amyloid-B42 Aggregates Occurs through a Secondary Nucleation Mechanism. *Proc. Natl. Acad. Sci. U.S.A.* **2013**, *110* (24), 9758–9763. https://doi.org/10.1073/pnas.1218402110.

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