Electronic Supplementary Material (ESI) for Food & Function.

Appendix 1: Supplementary Information

Polyphenols from Traditional Chinese Medicine and Mediterranean Diet are effective against Aβ toxicity *in vitro* and *in vivo* in *Caenorhabditis elegans*

Natural polyphenols reduce Aβ toxicity *in vitro* and *in vivo*

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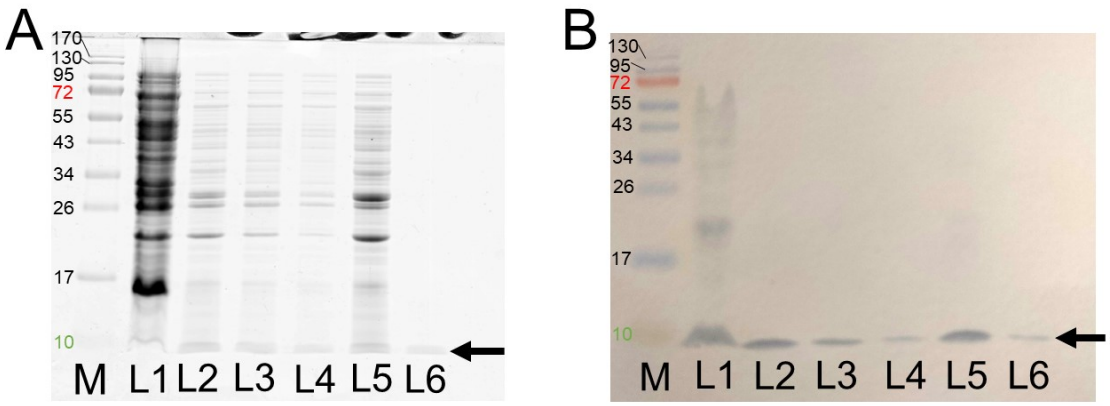
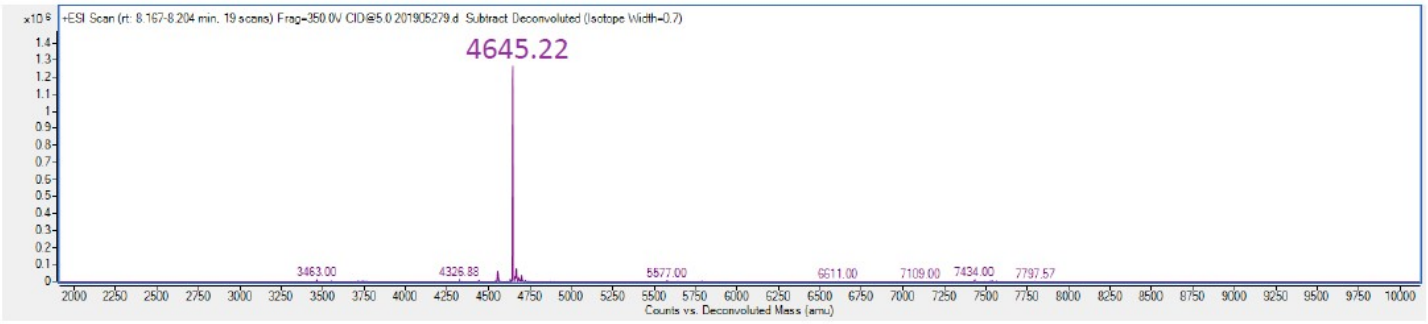
Supplementary Methods

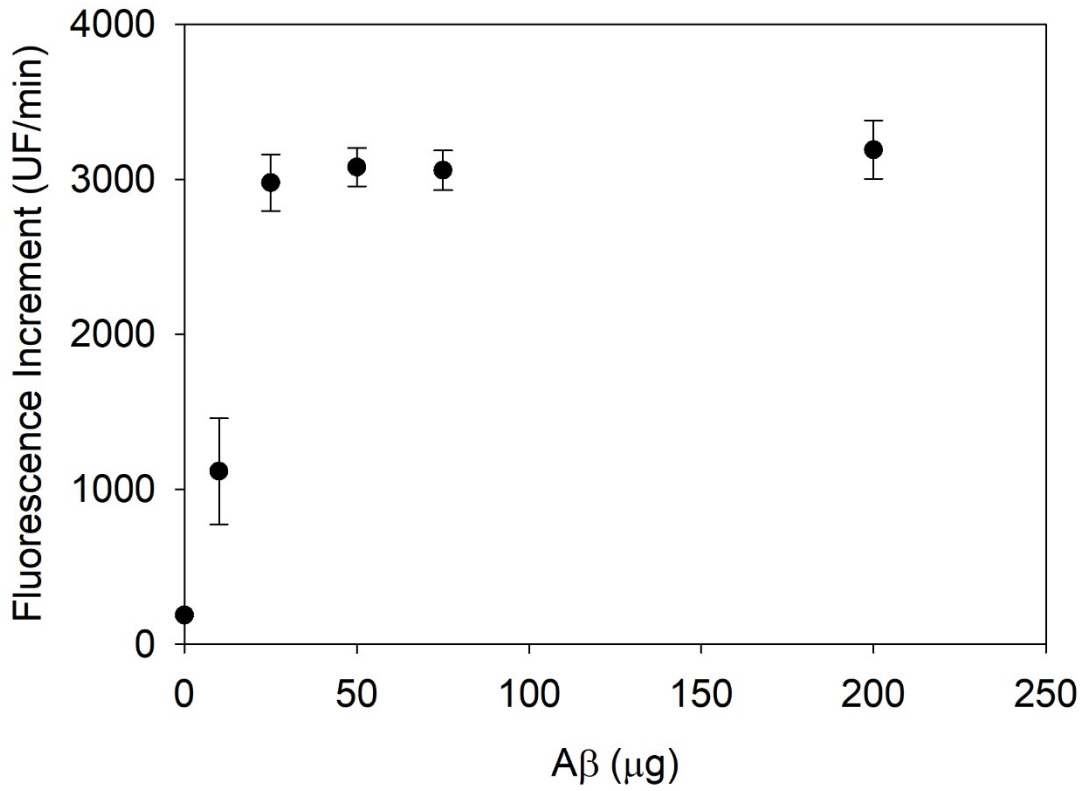
Results and Discussion



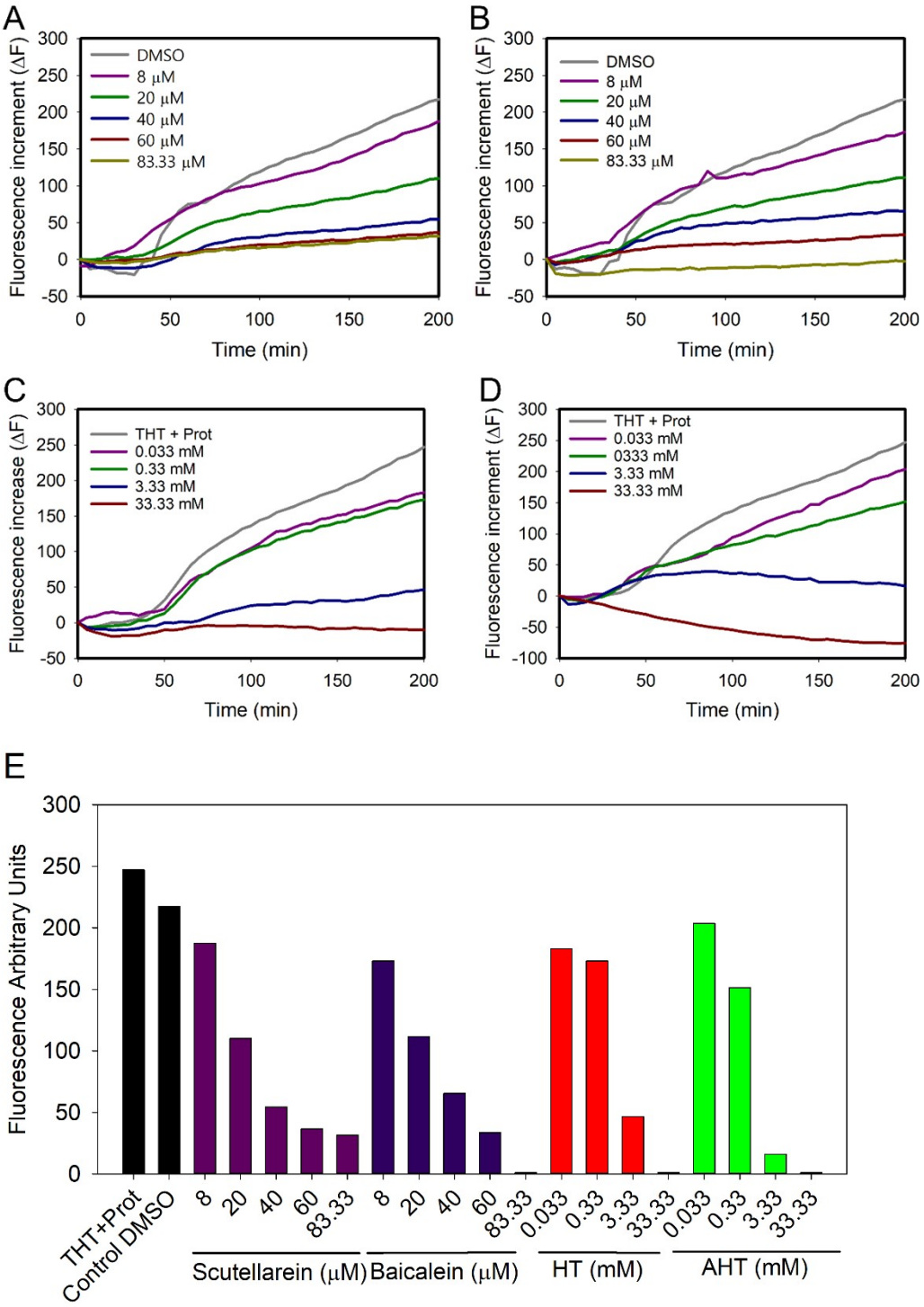
Supplementary Fig. S1. (A) SDS-PAGE electrophoresis analysis of human Aβ purification process. M: Molecular weight marker; L1: urea-solubilized pellet after sonication; L2, L3 y L4: eluates obtained after the ion-exchange chromatography; L5: discarded concentrate after the 30 kDa mass cut-off filter; L6: Filtrated pure protein used for the aggregation assays. (B) Western-blot analysis of the SDS-page gel using a specific monoclonal antibody against human amyloid beta peptide. Lanes description is the same than in (A). Arrow indicates the band corresponding to the human Aβ peptide.



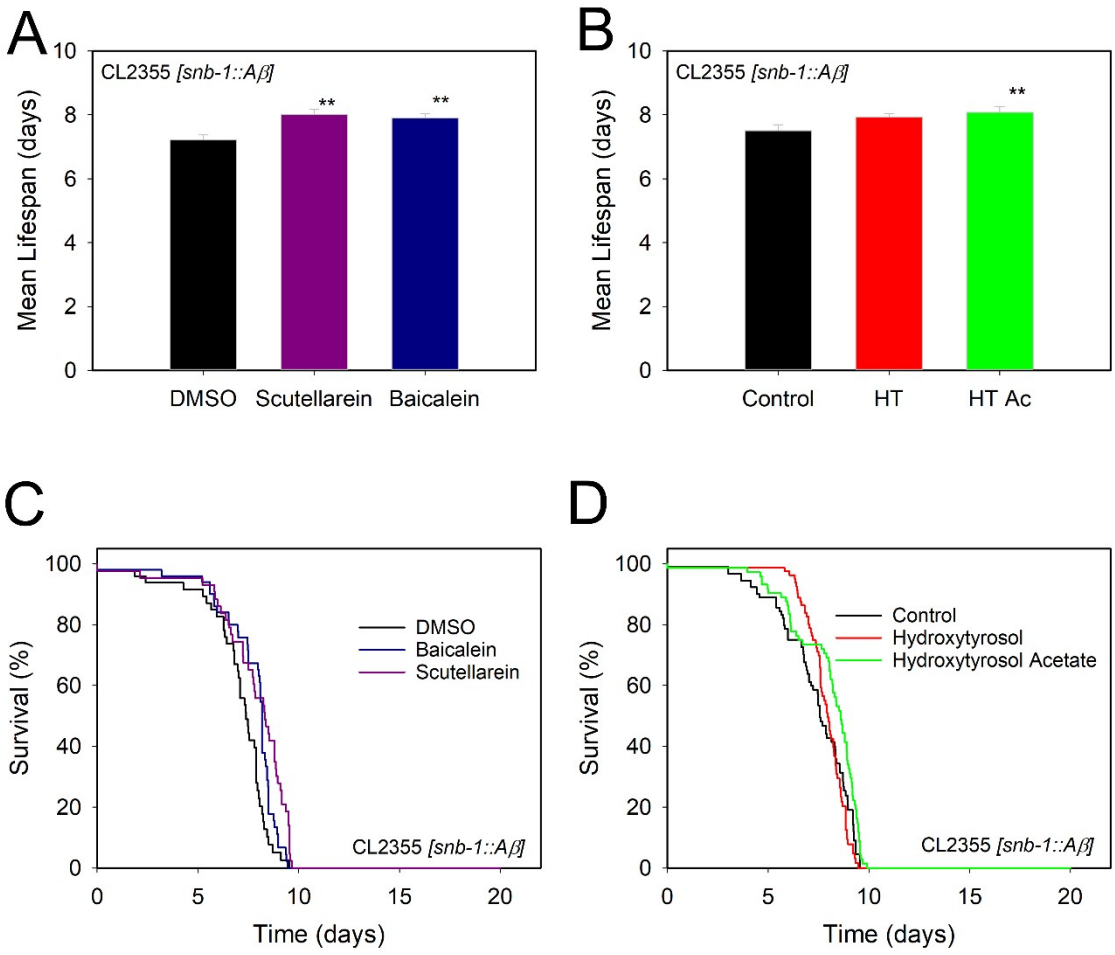
Supplementary Fig. S2. ESI/MS/Q-TOF mass spectra obtained for Aβ peptide after deconvolution process.



Supplementary Fig. S3. Effect of Aβ protein quantity on the aggregation velocity. The data is represented as mean fluorescent increment ± S.D, assay was performed in duplicate, two independent experiments were performed.



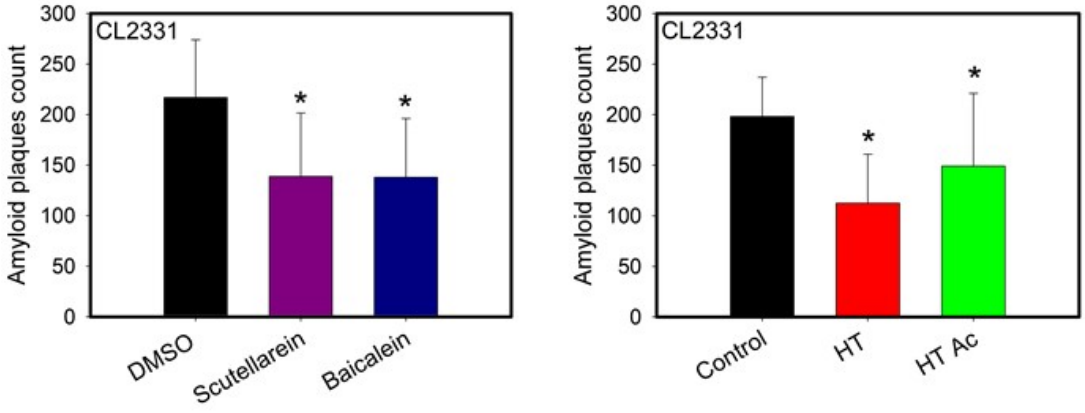
Supplementary Fig. S4. Fluorescence normalized curves for human Aβ aggregation in the presence of naturally occurring polyphenols. (A) Scutellarein, (B) Baicalein, (C) Hydroxytyrosol, (D) Hydroxytyrosol acetate. DMSO control referred to DMSO 0.33 %, THT and protein, two replicates were prepared for each condition and two independent experiments were performed. (E) Fluorescence intensity values at 200 minutes of the assay for each condition.



Supplementary Fig. S5. Naturally-occurring polyphenols effect on AD model strain's lifespan. Histograms show the mean lifespan of the strain CL2355 treated with flavones (A) and tyrosols (B). Data are represented as mean lifespan ± standard error, three plates per condition were measured. * significant at $p < 0.05$. Representative mortality curves are shown for the strain CL2355 treated with flavones (C) and tyrosols (D).

Table S1. Survival data

	n	Mean Lifespan (days)	Error Standart	Change	*p vs* Control
Control	92	7.51	0.18	0.00	
HT	81	7.94	0.1	5.73	0.7273
HT Ac	73	8.08	0.18	7.59	0.0213
DMSO	98	7.21	0.16	0.00	
Scutellarein	86	8.01	0.17	11.10	0.0000055
Baicalein	100	7.9	0.13	9.57	0.0001



Supplementary Fig. S6. Effect of polyphenols in Aβ aggregation *in vivo*. The results were obtained by counting the Aβ aggregates generated in the muscle walls of the *C. elegans* strain CL2331. Data are shown as mean values ± standard deviation, n ≥ 10, three plates for condition and two independent trials were performed. * significant at $p < 0.05$ flavones *vs.* DMSO control, tyrosols *vs.* Water control.

Table S2: Data obtained from the chemotaxis assays

Assay	Treatment	Plate	C[a]	T[b]	Total number of worms[c]	Worms in the center[d]
1	DMSO	1	35	53	88	56
		2	18	27	45	49
		3	27	36	63	40
		4	31	29	50	46
	Scutellarein	1	14	22	36	63
		2	27	39	68	41
		3	26	52	78	39
		4	26	44	70	52
	Baicalein	1	13	19	32	33
		2	16	27	43	44
		3	21	41	62	36
		4	11	18	29	30
2	Control	1	14	18	32	39
		2	10	12	22	28
		3	12	15	27	25
		4	12	15	27	38
	HT	1	12	32	44	33
		2	26	50	76	34
		3	14	24	38	41
		4	8	13	21	30
	HT Ac	1	8	14	22	43
		2	10	19	29	38
		3	6	10	16	31
		4	19	27	46	26
3	Control	1	18	24	42	43
		2	6	6	12	38
		3	6	7	13	31
	HT	1	6	14	20	46
		2	8	15	23	40
		3	7	14	21	36
	HT Ac	1	12	18	30	36
		2	16	16	32	32
		3	12	18	30	42
4	DMSO	1	30	40	70	17
		2	24	36	60	32
		3	25	34	59	14
	Scutellarein	1	17	33	50	20
		2	21	35	56	24
		3	19	40	59	21
	Baicalein	1	17	32	49	31
		2	25	42	67	38
		3	13	16	29	48

[a] number of animals in the control quadrants

[b] number of worms in the attractant quadrants

[c] total number of individuals for the chemotaxis assay (C+T)

[d] animals that did not leave the center of the plate, were counted but not included in the chemotaxis index.

Appendix 2: Fluorescence raw data for the *in vitro* amyloid aggregation assay. Data shown are averages of two independent experiments.