**Supplementary Fig. 1 HPLC chromatogram of six polyphenols in SLP.** (A) 1, (±)-catechin hydrate; 2, (-)-epicatechin gallate; 3, cymaroside; 4, quercetin; 5, luteolin: detection at 254 nm. (B) 6, (-)-gallocatechin: detection at 210 nm.
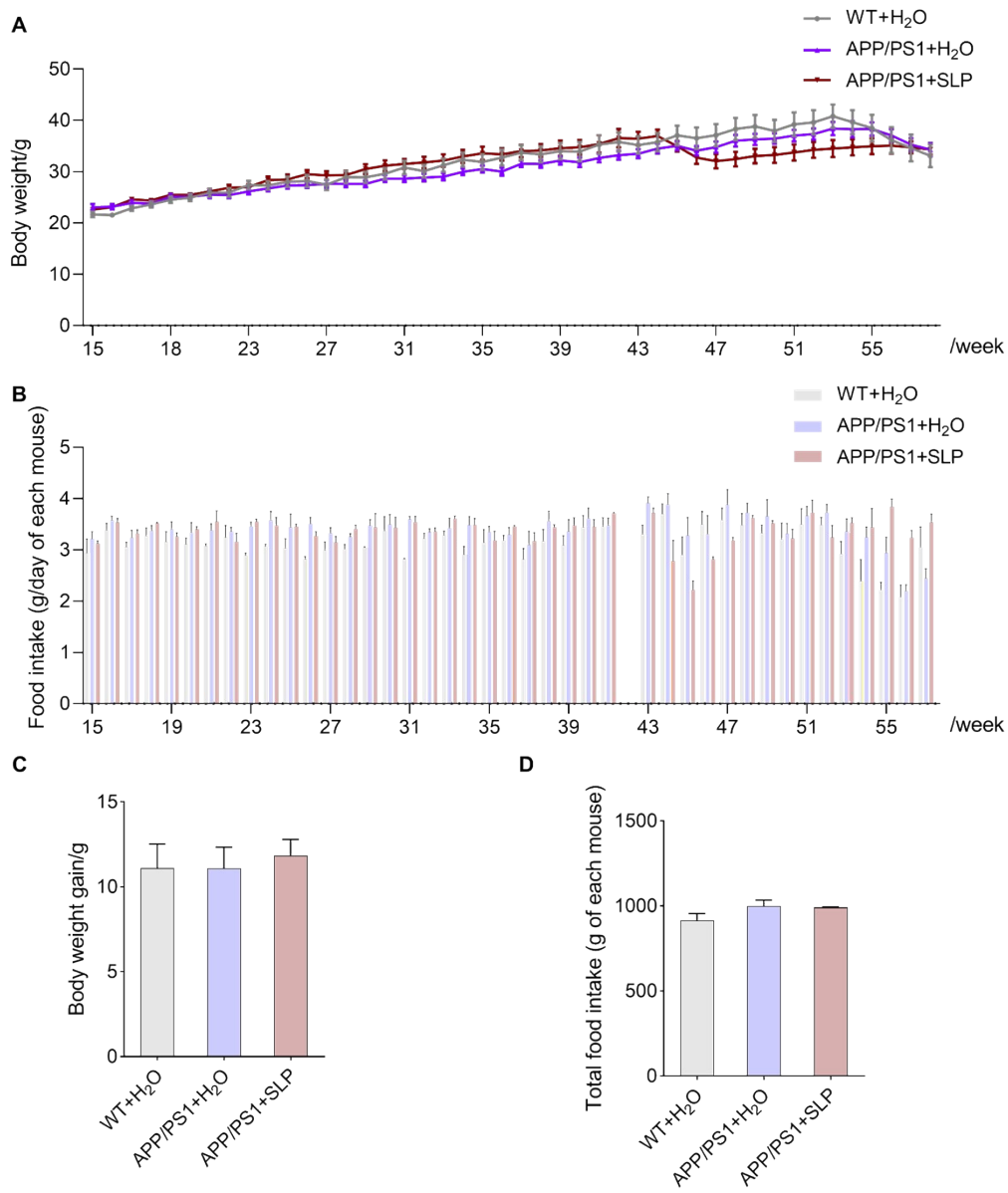
Supplementary Fig. 2 Body weight gain and food intake. Weekly body weight (A) and food intake (B) were recorded during the treatment. Because the mice did food-induced T maze test at 42-week, the food intake in 42-week-old mice was not recorded. Body weight gain (C) and total food intake (D) were calculated. Values represent the mean ± SEM.
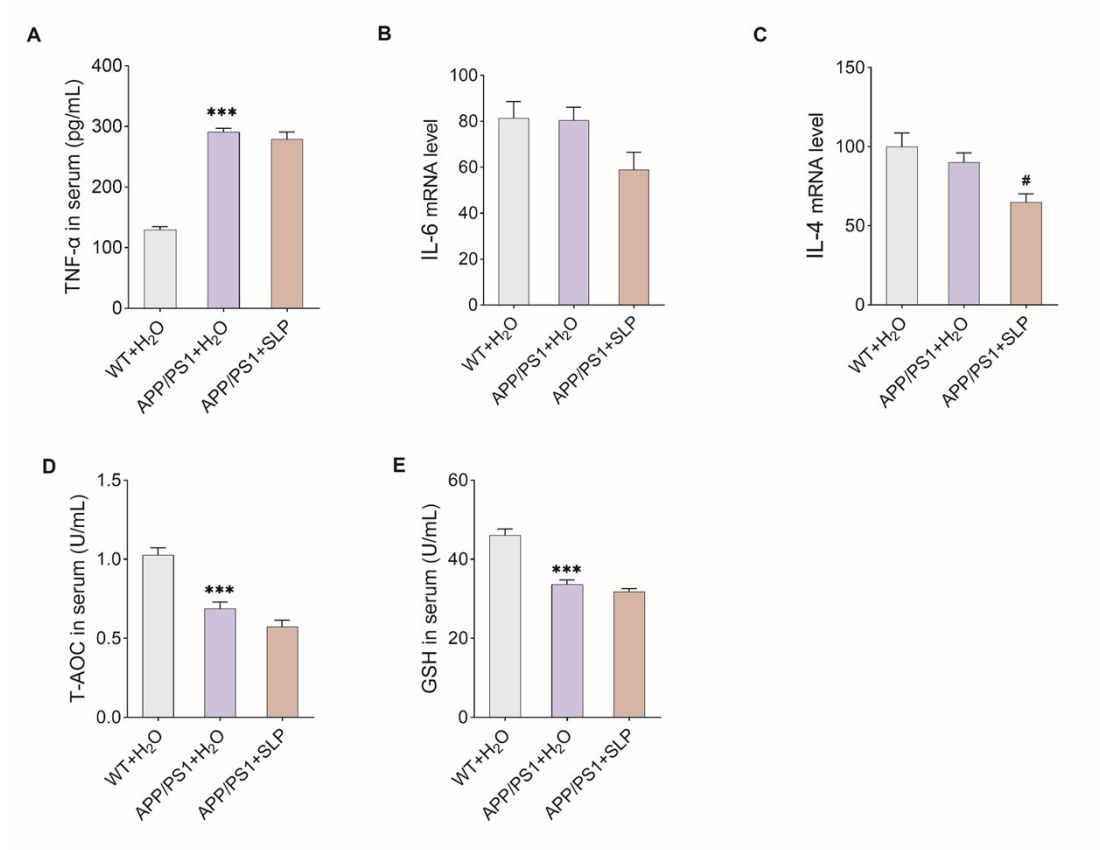
Supplementary Fig. 3 Effect of SLP on inflammatory factors in the serum and brain of APP/PS1 mice. (A) The level of TNF-α in the serum of WT+H_2O, APP/PS1+H_2O, and APP/PS1+SLP group mice, n = 8 per group. (B and C) mRNA levels of IL-4 (A) and IL-6 (B) in the cortex of WT+H_2O, APP/PS1+H_2O, and APP/PS1+SLP group mice. WT+H_2O, n = 12; APP/PS1+H_2O, n = 12; APP/PS1+SLP, n = 11. (D and E) The levels of T-AOC (D) and GSH (E) in the serum of mice, n = 8 per group. Values represent the mean ± SEM. The results were analysed by one-way ANOVA. *** $p < 0.001$ vs WT+H_2O group; # $p < 0.05$ vs APP/PS1+H_2O group.
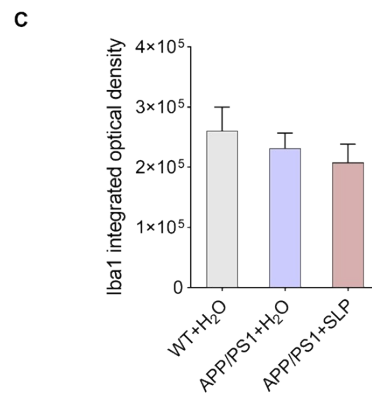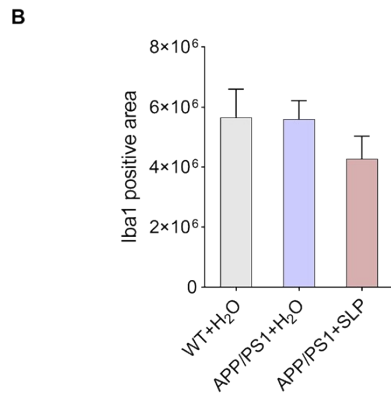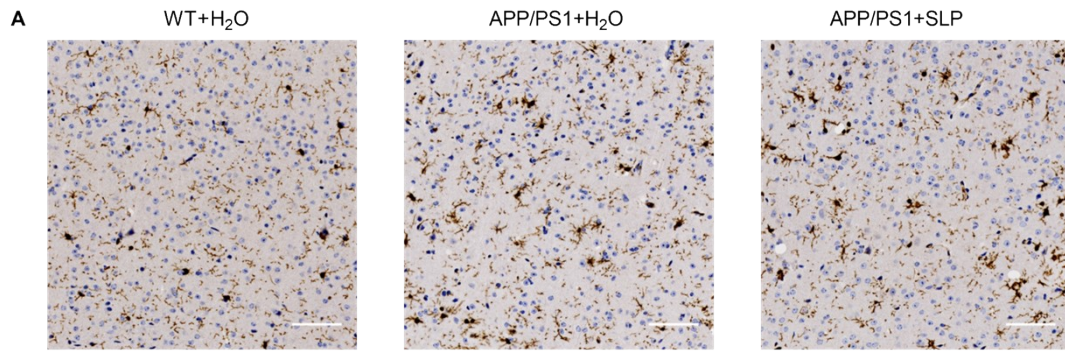
Supplementary Fig. 4 Effect of SLP on microglia activation in APP/PS1 mice. (A) Iba1 IHC in the brain. (B and C) Statistical analysis of Iba1

positive area (B) and integrated optical density (C), n = 6 per group. Values represent the mean ± SEM. The results were analysed by one-way

ANOVA.

Supplementary Table 1 Antibodies used in this study

Name	Source	Cat.no
6E10	Biolegend	803001
β-actin	Cell Signaling Technology	#3700
BACE	Cell Signaling Technology	#5606
IDE	Santa Cruz	SC-393887
CD10	Santa Cruz	SC-46656
GFAP	Sigma-Aldrich	MAB360
Iba1	Wako	019-19741
NeuN	Servicebio	GB11138
AQP4	Sigma-Aldrich	AB3594

Supplementary Table 2 Primers for real-time PCR

Name	Forward Sequence	Reverse Sequence
β-actin	GGCTGTATTCCCCTCCATCG	CCAGTTGGTAACAATGCCATGT
IDE	AATCCGGCCATCCAGAGAATA	GGGTCTGACAGTGAACCTATGT
NEP	CTCTCTGTGCTTGTCTTGCTC	GACGTTGCGTTTCAACCAGC
TNF-α	CCCTCACACTCAGATCATCTTCT	GCTACGACGTGGGCTACAG
IL-6	TAGTCCTTCCTACCCCAATTTCC	TTGGTCCTTAGCCACTCCTTC
IL-4	GGTCTCAACCCCCAGCTAGT	GCCGATGATCTCTCTCAAGTGAT

Supplementary Table 3 Levels of six polyphenols contained in SLP (mg/g)

Compound	Molecular formula	Content
(±)-Catechin hydrate	$C_{15}H_{14}O_6 \cdot xH_2O$	0.102
(-)-Epicatechin gallate	$C_{22}H_{18}O$	0.0232
Cynaroside	$C_{21}H_{20}O_{11}$	3.92
Quercetin	$C_{15}H_{10}O_7$	1.15
Luteolin	$C_{15}H_{10}O_6$	2.61
(-)-Gallocatechin	$C_{15}H_{14}O_7$	0.025