Supporting Information

Gut microbiome and brain transcriptome analyses reveal the effect of walnut oil in preventing scopolamine-induced cognitive impairment

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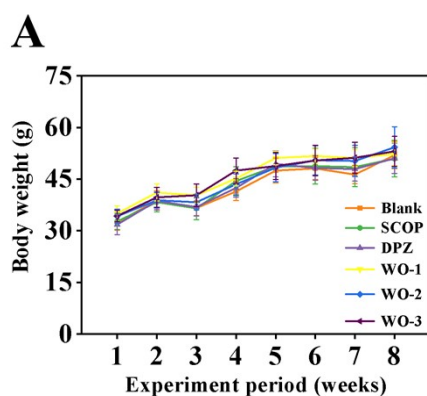c: School of Chemical Engineering, Northwest University, Xi'an, Shaanxi 710069, China

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43 **Table S1.** Lipid composition (%) and minor compositions content (mg/kg) of walnut oils.

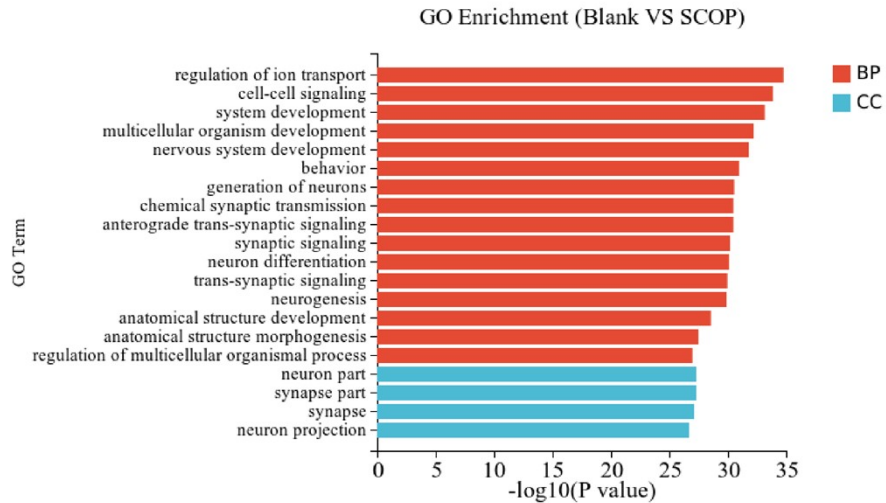| Fatty acid (%)	Walnut oil	Triacylglycerol (%)	Walnut oil	Minor components (mg/kg)	Walnut oil
C18:2	52.09	L-L-L	36.98	α-Tocopherol	8.51
C18:1	21.95	O-L-L	13.03	β-Tocopherol	0.45
C16:0	8.23	L-L-Ln	10.85	γ-Tocopherol	207.8
C18:3	7.06	P-L-L	7.71	δ-Tocopherol	9.71
C12:0	3.36	O-O-L	6.66	Campesterol	54.77
C20:3	2.88	O-L-Ln	4.32	β-Sitosterol	975.61
C17:1	0.76	P-O-L	3.35	Stigmasterol	1.05
C20:2	0.60	S-L-O	2.77	Δ5-Avenasterol	42.37
C17:0	0.55	L-Ln-Ln	2.28	Squalene	4.81
C20:4	0.55	L-S-L	1.82	Polyphenols	7.95
C11:0	0.52	P-O-O	1.78		
C14:1	0.41	P-Ln-L	1.67		
C18:0	0.37	O-O-Ln	1.62		
C20:1	0.23	P-P-S	1.26		
C14:0	0.21	P-O-Ln	1.03		
C15:1	0.11	S-L-Ln	0.95		
C15:0	0.07	P-P-P	0.95		
C13:0	0.05	Ln-Ln-Ln	0.91		
SFA	13.36				
MUFA	23.46				
PUFA	63.18				

44 SFA (C16:0 + C12:0 + C17:0 + C11:0 + C18:0 + C14:0+ C15:0 + C13:0), MUFA (C18:1 + C17:1
45 + C14:1 + C20:1 + C15:1), PUFA (C18:2 + C18:3 + C20:3 + C20:2 + C20:4). P, palmitic; S, stearic;
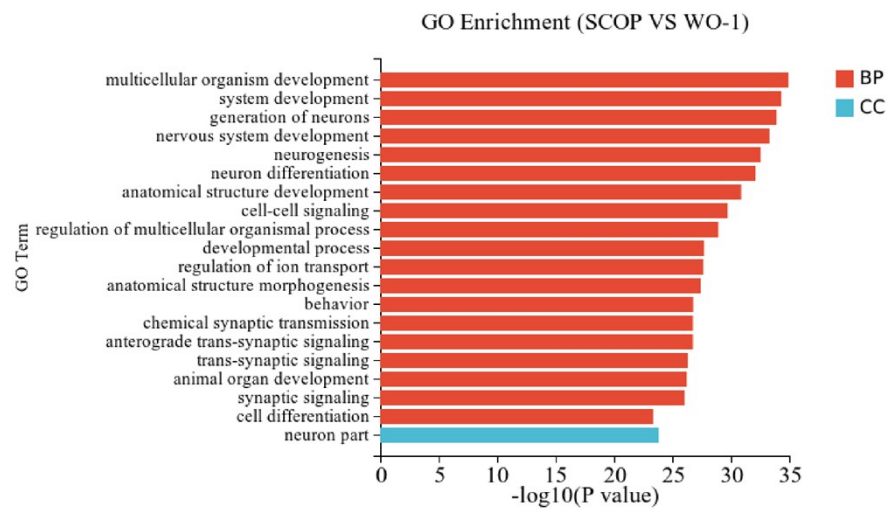46 O, oleic; L, linoleic; Ln, linolenic.

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48 **Figure S1.** Effect of WO on body weight and organ coefficient of the SCOP-induced mice. (A)
49 Experimental schedule of WO supplementation. (A) Body weight. (B) Organ coefficient. Data are
50 presented as the mean ± standard error of the mean (SEM), n = 10. $*p < 0.05$, $**p < 0.01$ compared
51 to the Blank group; $\#p < 0.05$, $\#\#p < 0.01$ compared to the SCOP group.

A GO Enrichment (Blank VS SCOP)

B GO Enrichment (SCOP VS WO-1)

C GO Enrichment (SCOP VS DPZ)
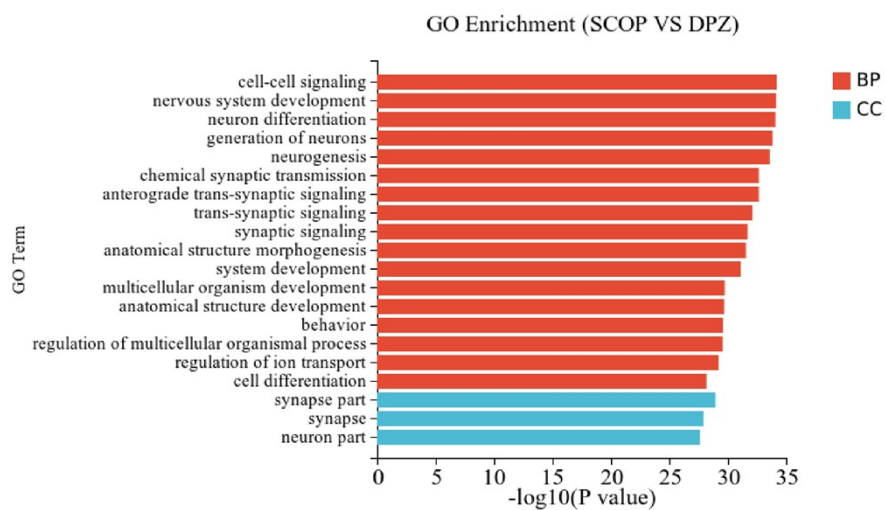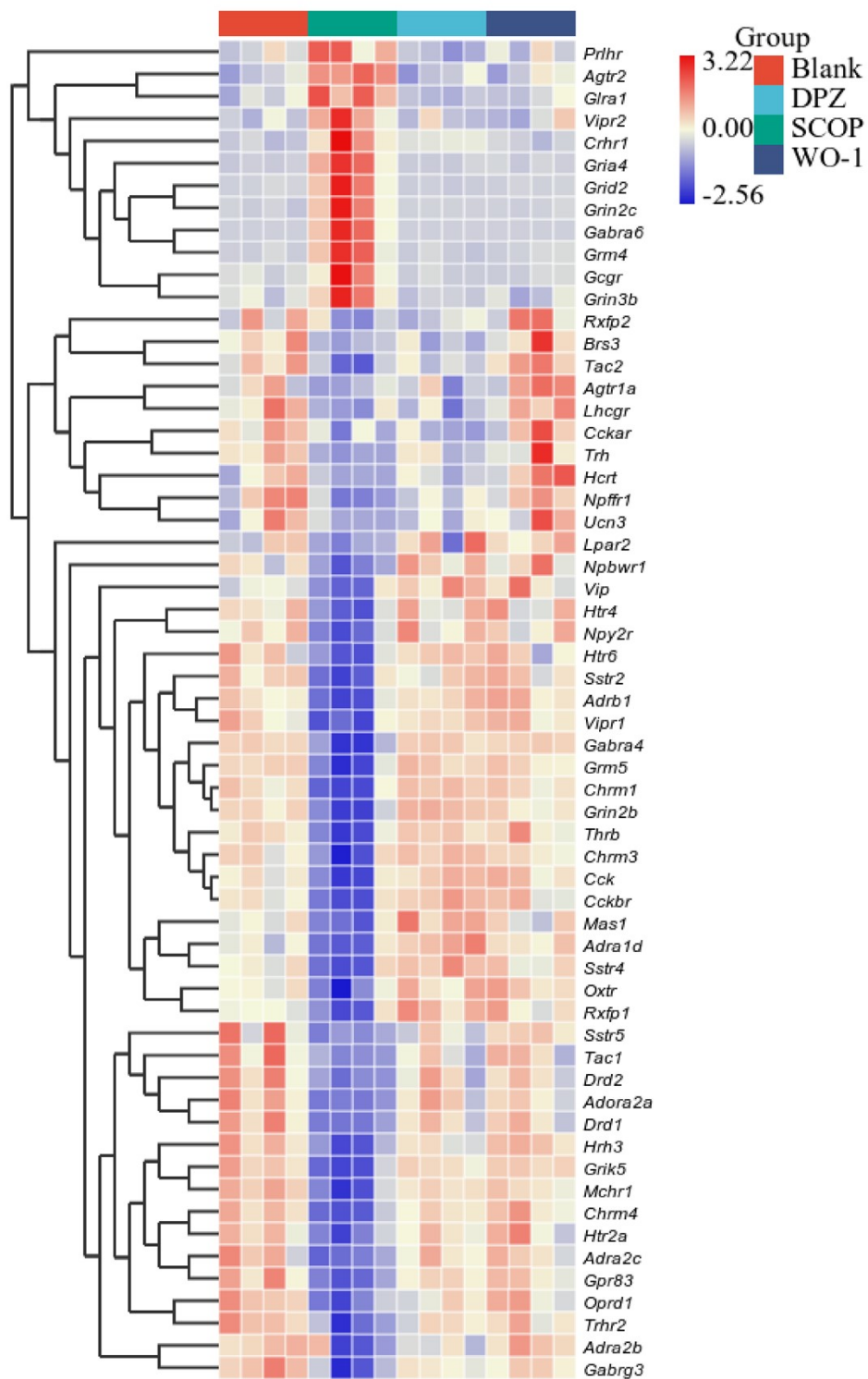
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Figure S2. The GO enrichment analysis of DEGs (the top 20 GO terms with the lowest p-value and the most significant enrichment) between the Blank vs SCOP group (A), SCOP vs WO-1 group (B) and SCOP vs DPZ group (C).

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Figure S3. A Z score-scaled heatmap of 60 DEGs which between SCOP and WO-1 and related to neuroactive ligand-receptor interaction pathways in each group.

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Table S2. Statistical analysis of beta diversity

Group1	Group2	R	p-value
all	-	0.588	0.001
Blank	SCOP	0.681	0.028
Blank	DPZ	0.484	0.008
Blank	WO-1	0.576	0.008
SCOP	DPZ	0.738	0.022
SCOP	WO-1	0.788	0.005
DPZ	WO-1	0.308	0.015

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