Table S1. The main chemical components of Tieguanyin tea extracts.

Components	Percentage (%)		
	Tgy-C	Tgy-Q	Tgy-N
tea polyphenols	36.82	43.72	39.64
free amino acids	4.79	6.41	6.26
soluble protein	10.47	8.86	9.21
soluble sugar	27.81	36.20	33.65
tea polysaccharides	5.74	4.86	3.73
flavone	3.21	2.41	2.65
caffeine	7.49	7.13	7.12

Table S2. Different metabolites between Tgy-C and MC groups in the pathway of biosynthesis of amino acids.

Description	VIP	Fold Change	P-value
L-Threonine	1.1	0.55	5.9E-06
L-Leucine	4.4	0.56	5.3E-04
L-Methionine	2.8	0.46	1.4E-03
L-Phenylalanine	5.5	0.56	1.9E-03
L-Tryptophan	1.7	0.57	5.0E-02
L-Citrulline	2.3	0.69	7.4E-02
L-Tyrosine	2.3	1.38	9.9E-02
L-Alanine	2.5	0.48	1.5E-03
L-Lysine	2.6	0.28	9.6E-03
L-Glutamate	3.1	0.55	2.3E-02

Table S3. Different metabolites between Tgy-C and MC groups in the pathway of ABC transporters.

Description	VIP	Fold Change	P-value
L-Threonine	1.1	0.55	5.9E-06
L-Leucine	4.4	0.56	5.3E-04
L-Phenylalanine	5.5	0.56	1.9E-03
Riboflavin	1.3	0.48	8.3E-03
Thiamine	13	0.57	2.0E-02
N-Acetyl-D-glucosamine	1.5	0.74	3.5E-02
Deoxycytidine	1.7	1.58	4.2E-02
Taurine	1.0	0.30	6.2E-02
L-Alanine	2.5	0.48	1.5E-03
L-Lysine	2.6	0.28	9.6E-03
2'-Deoxyuridine	5.9	0.38	1.6E-02
L-Glutamate	3.1	0.55	2.3E-02
Deoxyinosine	5.7	0.41	3.5E-02

Table S4. Different metabolites between Tgy-N and MC groups in the pathway of biosynthesis of amino acids.

Metabolites	Tgy-N vs MC			Tgy-N vs Tgy-C
	VIP	Fold Change	P-value	Fold Change
L-Threonine	1.2	0.50	3.5E-04	0.92
L-Phenylalanine	6.7	0.49	2.4E-03	0.89
L-Methionine	2.8	0.45	3.0E-03	1.00
L-Leucine	4.3	0.59	3.2E-03	0.95
L-Tyrosine	3.1	0.55	2.0E-02	0.88
L-Glutamate	2.1	0.55	3.1E-02	0.95
L-Citrulline	2.4	0.65	3.1E-02	0.94
L-Histidine	1.8	0.52	4.5E-02	0.73
L-Arginine	14	0.44	8.6E-02	0.64
L-Tryptophan	2.1	0.58	9.4E-02	1.01
L-Alanine	2.4	0.45	2.7E-04	0.63
L-Valine	1.3	0.29	2.3E-03	0.51
L-Lysine	2.5	0.22	6.1E-03	0.80
L-Glutamine	1.6	0.44	9.5E-02	0.72

Table S5. Different metabolites between Tgy-N and MC groups in the pathway of ABC transporters.

Metabolites	Tgy-N vs MC			Tgy-N vs Tgy-C
	VIP	Fold Change	P-value	Fold Change
L-Threonine	1.2	0.50	3.5E-04	0.92
Thiamine	16.5	0.50	1.6E-03	0.87
L-Phenylalanine	6.7	0.49	2.4E-03	0.89
L-Leucine	4.3	0.59	3.2E-03	0.95
Riboflavin	1.2	0.50	1.2E-02	1.04
L-Glutamate	2.1	0.55	3.1E-02	0.95
Deoxycytidine	1.7	1.60	3.7E-02	0.99
L-Histidine	1.8	0.52	4.5E-02	0.73
N-Acetyl-D-glucosamine	1.4	2.09	8.5E-02	1.13
L-Arginine	14	0.44	8.6E-02	0.64
L-Alanine	2.4	0.45	2.7E-04	0.63
L-Valine	1.3	0.29	2.3E-03	0.51
2'-Deoxyuridine	6.4	0.24	2.7E-03	0.63
L-Lysine	2.5	0.22	6.1E-03	0.80
Deoxyinosine	5.6	0.39	2.8E-02	0.95
D-Mannose	6.4	0.56	5.1E-02	0.71
Taurine	7.4	0.36	6.8E-02	1.37
L-Glutamine	1.6	0.44	9.5E-02	0.72

Table S6. Different metabolites between Tgy-Q and MC groups in the pathway of biosynthesis of amino acids.

Metabolites	Tgy-Q vs MC			Tgy-Q vs Tgy-C
	VIP	Fold Change	P-value	Fold Change
L-Arginine	5.5	0.39	3.1E-02	1.05
L-Histidine	1.8	0.50	4.8E-02	0.93
L-Tryptophan	1.7	0.62	9.0E-02	1.08
L-Valine	1.4	0.30	1.3E-03	0.53
L-Lysine	2.4	0.36	2.1E-02	1.12
3-Phosphoserine	1.3	6.40	2.5E-02	1.43
L-Citrulline	1.7	0.52	5.8E-02	1.13
L-Threonine	1.4	0.62	5.9E-02	1.34
L-Glutamine	1.6	0.44	6.9E-02	0.71

Table S7. Different metabolites between Tgy-Q and MC groups in the pathway of ABC transporters.

Metabolites	Tgy-Q vs MC			Tgy-Q vs Tgy-C
	VIP	Fold Change	P-value	Fold Change
N-Acetyl-D-glucosamine	1.7	2.28	4.7E-03	1.51
Thiamine	13	0.62	1.8E-02	1.09
L-Arginine	5.5	0.39	3.1E-02	1.05
L-Histidine	1.8	0.50	4.8E-02	0.93
Taurine	1.1	0.31	7.2E-02	1.05
L-Valine	1.4	0.30	1.3E-03	0.53
L-Lysine	2.4	0.36	2.1E-02	1.12
L-Threonine	1.4	0.62	5.9E-02	1.34
D-galacturonic acid	1.3	1.96	6.9E-02	2.00
L-Glutamine	1.6	0.44	6.9E-02	0.71

Figure S1. Tgy-C treatment showed different effect on the metabolome with Tgy-N and Tgy-Q in AD mice. Score scatter plot of OPLS-DA for Tgy-C vs Tgy-N and Tgy-C vs Tgy-Q in positive (A and C) and negative (B and D) ion mode.