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- 456

457 **Tables**

Table 1. Composition and chemical analysis of basal pollen patties with curcumin-steviol glycoside complex (CSG)

Items	PC	T1	T2
Ingredients (g)			
Defatted soy flour	30	30	30
Brewer's Yeast	15	15	15
Pollen	15	15	15
Sugar	40	32	24
CSG	0	8	16
Sugar syrup	100	100	100
Total	200	200	200
Chemical analyzed (%)			
Moisture	12.31 ± 0.27	11.64 ± 0.24	10.85 ± 0.59
Crude Protein	10.39 ± 0.15	10.34 ± 0.02	10.36 ± 0.15
Ether Extract	0.08 ± 0.00	0.08 ± 0.00	0.08 ± 0.00
Crude Fiber	3.83 ± 0.11	3.84 ± 0.14	3.80 ± 0.08
Crude Ash	6.08 ± 0.31	6.10 ± 0.28	6.11 ± 0.29
NFE	67.31 ± 0.48	68.00 ± 0.13	68.81 ± 0.72

Abbreviation: PC, supplementation of basal pollen patty; T1, supplementation of basal pollen diets + 0.04% of CSG; T2, supplementation of basal pollen diets + 0.08% of CSG; NFE, nitrogen free extract.

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Table 2. Primer sequences used for the RT-qPCR analysis with the Catalase, Trxr1, SOD1, SOD2 and GAPDH genes

Gene	Primers	Sequence (5'-3')
Glyceraldehyde-3-phosphate dehydrogenase 2 (GAPDH)	Forward	CACATGGAAAATTCAAAGGA
	Reverse	AATGACCAGAAGCTTTTTCC
Thioredoxin reductase 1 (Trxr1)	Forward	TGTGCTGGATTTTTAAATGG
	Reverse	TCCACCCAATGTACAAGAAG
Superoxide dismutase 1 (SOD1)	Forward	CGGCTGAAGTATTCATTACG
	Reverse	ACGCACACTGCTTTAGTCAT
Superoxide dismutase 2 (SOD2)	Forward	GAAAATACCATTGCGATTCA
	Reverse	ATCGGGTCGAACATTTTTAT
Catalase	Forward	CCACTCATTCTGTTGGTAA
	Reverse	GCATCACCGTAAGTGAACAT

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Table 3. Mean Thorax, head, abdomen, and total body weight of *Apis mellifera* with supplementing different pollen patties with curcumin-steviol glycoside complex (CSG)

Items (mg)	NC	PC	T1	T2	SEM	<i>p</i> -value
0 days						
Thorax	9.70	9.78	9.39	9.25	0.205	0.244
Head	4.00	3.70	3.98	3.70	0.148	0.460
Abdomen	18.20	23.30	16.60	24.90	4.496	0.510
Total BW	36.05	39.93	33.27	35.05	2.055	0.151
14 days						
Thorax	9.47	9.58	9.76	9.55	0.242	0.856
Head	3.74	3.75	4.17	4.00	0.143	0.117
Abdomen	23.28	24.44	26.20	26.34	2.341	0.758
Total BW	35.04	36.02	34.00	34.78	1.359	0.771
28 days						
Thorax	9.36	9.34	8.95	8.89	0.408	0.772
Head	5.00	5.20	6.00	4.47	0.637	0.406
Abdomen	30.52	30.76	30.41	32.32	2.554	0.947
Total BW	36.68	35.20	38.30	37.30	0.003	0.922
42 days						
Thorax	8.90 ^b	9.00 ^b	9.50 ^{ab}	9.80 ^a	0.183	0.002
Head	4.05	4.00	4.17	4.05	0.120	0.782
Abdomen	19.76	21.25	21.78	21.85	0.727	0.168
Total BW	36.81	37.91	35.80	35.20	1.547	0.625

Abbreviation: NC, no supplementation of basal pollen patty; PC, supplementation of basal pollen patty; T1, supplementation of basal pollen patty + 0.04% of CSG; T2, supplementation of basal pollen patty + 0.08% of CSG; BW, body weight; SEM, standard error means. ^{a-b} Means within column with different superscripts differ significantly ($n=3, p < 0.05$).

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Table 4. Diet consumption of *Apis mellifera* with supplementing different pollen patties with curcumin-steviol glycoside complex (CSG)

Items (g)	PC	T1	T2	SEM	<i>p</i> -value
Daily consumption	28.27	27.61	28.03	1.493	0.952

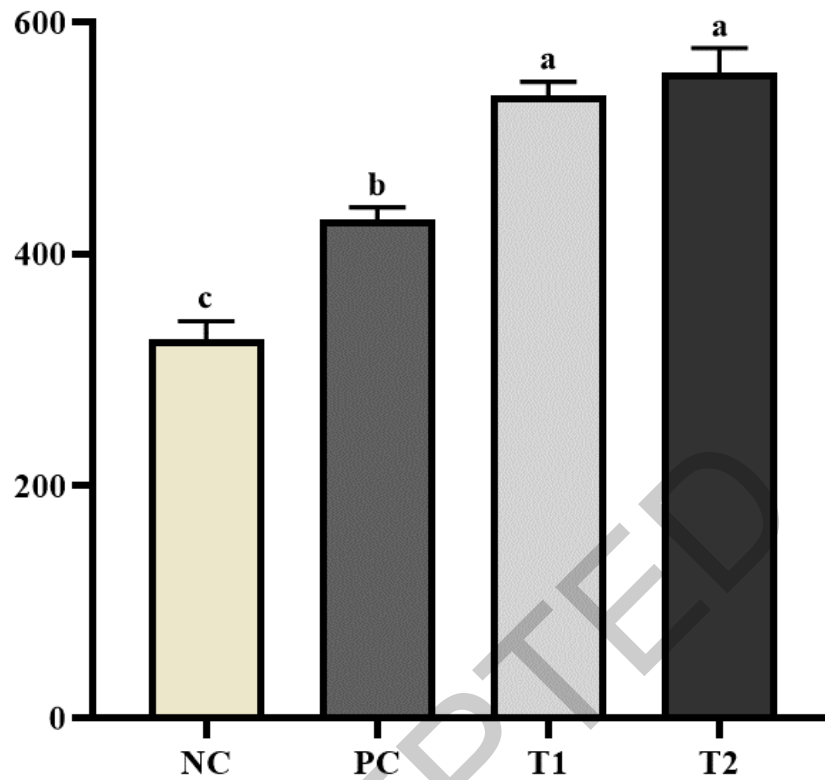
Abbreviation: PC, supplementation of basal pollen patty; T1, supplementation of basal pollen patty + 0.04% of CSG; T2, supplementation of basal pollen patty + 0.08% of CSG; SEM, standard error means. Each value is the mean value of 3 replicates.

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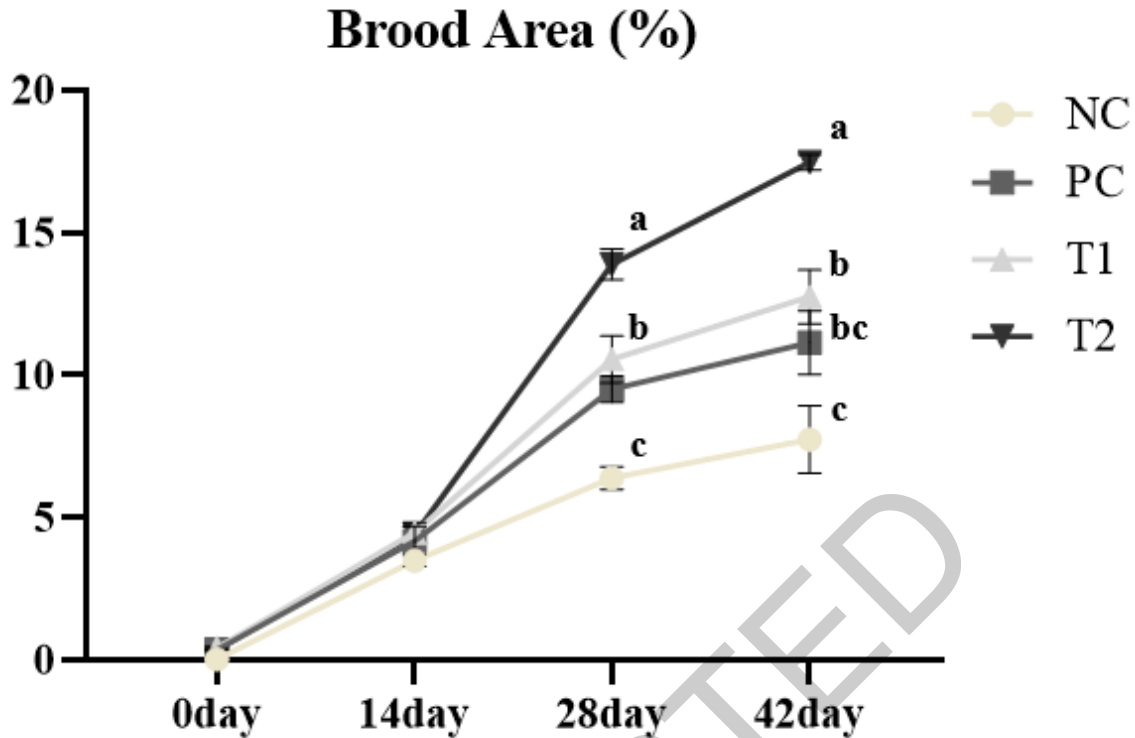
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Honey Production (g/colony)



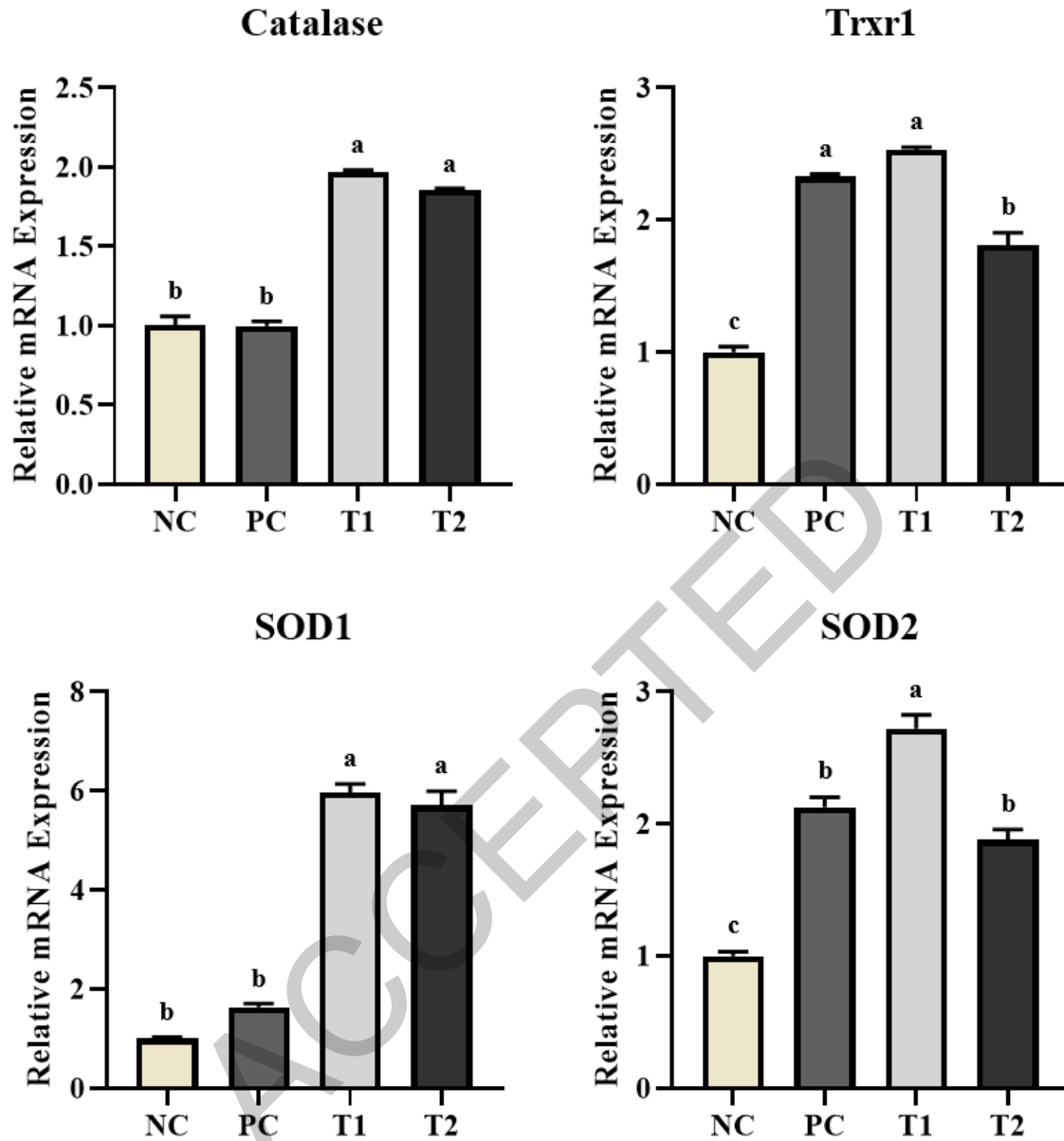
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469 **Figure 1. Honey production of *Apis mellifera* with supplementing different pollen patties**
470 **with curcumin-steviol glycoside complex (CSG).** All data are presented as mean \pm SEM (n=3).
471 ^{a-c} Means within column with different superscripts differ significantly ($p < 0.05$). NC, no
472 supplementation of basal pollen patty; PC, supplementation of basal pollen patty; T1,
473 supplementation of basal pollen patty + 0.04% CSG; T2, supplementation of basal pollen diets +
474 0.08% CSG.



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Figure 2. Brood area of *Apis mellifera* with supplementing different pollen patties with curcumin-steviol glycoside complex (CSG). All data are presented as mean \pm SEM (n=3). ^{a-c} Means within column with different superscripts differ significantly ($p < 0.05$). NC, no supplementation of basal pollen patty; PC, supplementation of basal pollen patty; T1, supplementation of basal pollen patty + 0.04% CSG; T2, supplementation of basal pollen patty + 0.08% CSG.



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487

488 **Figure 3. Relative gene expression of *Apis mellifera* with supplementing different pollen**489 **patties with curcumin-steviol glycoside complex (CSG). All data are presented as mean \pm** 490 **SEM (n=3). ^{a-c} Means within column with different superscripts differ significantly ($p < 0.05$).**491 **NC, no supplementation of basal pollen patty; PC, supplementation of basal pollen patty +**492 **0.04% CSG; T1, supplementation of basal pollen patty + 0.08% CSG; Trxr 1, Thioredoxin reductase 1; SOD 1, Superoxide dismutase 1; SOD 2,**493 **Superoxide dismutase 2.**

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