

1 **Supplementary Information**

2 **Cyanidin-3-*O*-glucoside and protocatechuic acid alleviates heat stress-induced**
3 **testicular damage**

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19 **Table S1.** Primer sequence for qPCR in this study

Gene	Forward primer (5'→3')	Reverse primer (5'→3')
<i>Beta-actin</i>	GGGAAATCGTGCGTGAC	AGGCTGGAAAAGAGCCT
<i>XBPI</i>	GACAGAGAGTCAAACCTAACGTGG	GTCCAGCAGGCAAGAAGGT
<i>IRE1α</i>	GCCGAAGTTCAGATGGAATC	ATCAGCAAAGGCCGATGA

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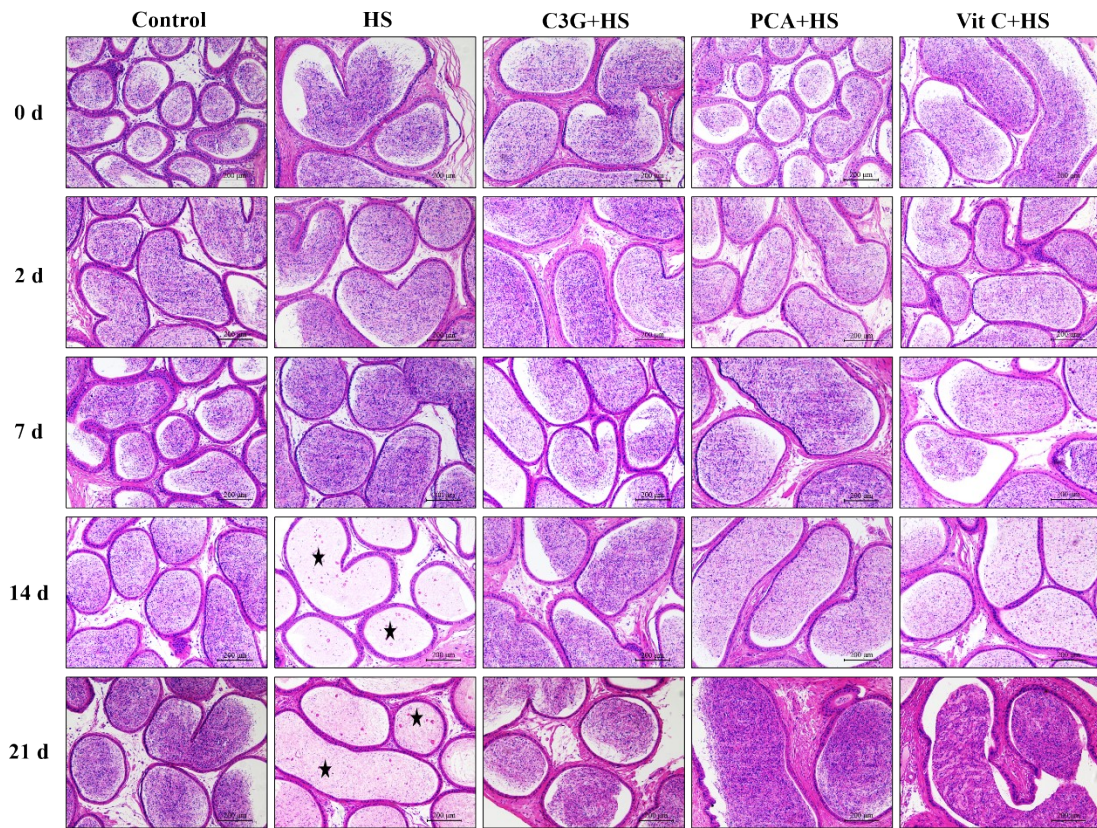
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22 **Table S2.** Sperm motility parameter. The cauda epididymis from mice

Groups	Time (day)	Control	HS	C3G+HS	PCA+HS	Vit C+HS
VSL	0 d	28.20±2.31 ^a	19.47±2.30 ^a	22.31±3.25 ^a	22.13±4.10 ^a	21.85±1.39 ^a
	2 d	20.55±4.19 ^a	19.29±4.27 ^a	12.58±2.21 ^a	16.61±1.66 ^a	14.61±3.08 ^a
	7 d	37.96±5.92 ^a	23.56±4.27 ^{ab}	16.42±3.53 ^b	29.72±4.16 ^{ab}	19.19±4.21 ^b
	14 d	44.63±3.97 ^a	8.31±2.34 ^b	11.91±3.54 ^b	4.97±0.85 ^b	8.58±2.15 ^b
	21 d	31.59±3.76 ^a	8.39±1.57 ^b	7.73±0.93 ^b	7.89±2.29 ^b	5.47±0.76 ^b
VCL	0 d	30.10±2.51 ^a	20.77±2.47 ^a	23.65±3.40 ^a	23.63±4.41 ^a	23.42±1.48 ^a
	2 d	21.86±4.45 ^a	20.55±4.60 ^a	13.38±2.33 ^a	17.78±1.79 ^a	15.64±3.30 ^a
	7 d	41.43±6.57 ^a	25.50±4.65 ^{ab}	17.75±3.85 ^b	32.25±4.53 ^{ab}	20.78±4.59 ^b
	14 d	48.09±4.34 ^a	8.84±2.51 ^b	12.78±3.81 ^b	5.55±1.06 ^b	9.24±2.33 ^b
	21 d	33.89±4.07 ^a	9.21±1.71 ^b	8.33±0.98 ^b	8.51±2.47 ^b	5.62±0.70 ^b
VAP	0 d	21.13±1.76 ^a	14.58±1.73 ^a	16.60±2.38 ^a	16.59±3.10 ^a	16.44±1.04 ^a
	2 d	15.35±3.12 ^a	14.42±3.23 ^a	9.39±1.64 ^a	12.48±1.26 ^a	10.98±2.32 ^a
	7 d	29.08±4.61 ^a	17.90±3.27 ^{ab}	12.46±2.71 ^b	22.64±3.18 ^{ab}	14.59±3.22 ^b
	14 d	33.76±3.05 ^a	6.21±1.76 ^b	8.97±2.67 ^b	3.90±0.74 ^b	6.49±1.63 ^b
	21 d	23.80±2.86 ^a	6.46±1.20 ^b	5.85±0.69 ^b	5.97±1.73 ^b	3.94±0.49 ^b
ALH	0 d	8.97±0.75 ^a	6.19±0.74 ^a	7.05±1.01 ^a	7.04±1.31 ^a	6.98±0.44 ^a
	2 d	6.51±1.32 ^a	6.12±1.37 ^a	3.99±0.70 ^a	5.30±0.53 ^a	4.66±0.98 ^a
	7 d	12.34±1.96 ^a	7.60±1.39 ^{ab}	5.29±1.15 ^b	9.61±1.35 ^{ab}	6.19±1.37 ^b
	14 d	14.33±1.29 ^a	2.63±0.75 ^b	3.81±1.14 ^b	1.66±0.32 ^b	2.75±0.69 ^b
	21 d	10.10±1.21 ^a	2.74±0.51 ^b	2.48±0.29 ^b	2.53±0.74 ^b	1.68±0.21 ^b
BCF	0 d	4.48±0.41 ^a	3.27±0.51 ^a	4.04±0.60 ^a	4.36±1.12 ^a	3.80±0.50 ^a
	2 d	4.41±1.04 ^a	4.32±1.26 ^a	2.42±0.50 ^a	3.56±0.57 ^a	3.05±0.76 ^a
	7 d	9.03±1.93 ^a	5.24±1.24 ^a	3.86±1.00 ^a	7.05±1.22 ^a	4.13±1.22 ^a
	14 d	9.42±1.49 ^a	1.26±0.59 ^b	1.90±0.86 ^b	0.43±0.06 ^b	1.04±0.33 ^b
	21 d	7.13±0.98 ^a	0.86±0.21 ^b	0.79±0.13 ^b	1.03±0.53 ^b	0.53±0.11 ^b
LIN	0 d	0.94±0.00 ^a	0.93±0.01 ^a	0.94±0.00 ^a	0.93±0.01 ^a	0.93±0.00 ^a
	2 d	0.93±0.01 ^a	0.92±0.02 ^a	0.94±0.00 ^a	0.94±0.00 ^a	0.93±0.01 ^a
	7 d	0.91±0.01 ^a	0.88±0.03 ^a	0.89±0.02 ^a	0.92±0.00 ^a	0.86±0.04 ^a
	14 d	0.93±0.01 ^a	0.61±0.09 ^a	0.68±0.11 ^a	0.64±0.06 ^a	0.73±0.08 ^a
	21 d	0.93±0.01 ^a	0.77±0.05 ^{ab}	0.78±0.04 ^{ab}	0.67±0.09 ^b	0.66±0.06 ^b
MAD	0 d	4.78±0.44 ^a	3.50±0.55 ^a	4.30±0.63 ^a	4.67±1.21 ^a	4.08±0.55 ^a
	2 d	4.70±1.11 ^a	4.61±1.35 ^a	2.58±0.53 ^a	3.81±0.61 ^a	3.86±1.02 ^a
	7 d	10.51±2.53 ^a	5.67±1.34 ^a	4.17±1.09 ^a	7.67±1.33 ^a	4.49±1.33 ^a
	14 d	10.18±1.63 ^a	1.35±0.64 ^b	2.04±0.93 ^b	0.47±0.07 ^b	1.12±0.36 ^b
	21 d	7.66±1.07 ^a	0.93±0.22 ^b	0.85±0.14 ^b	1.12±0.57 ^b	0.76±0.22 ^b
STR	0 d	1.34±0.00 ^a	1.33±0.01 ^a	1.34±0.00 ^a	1.32±0.02 ^a	1.33±0.01 ^a
	2 d	1.32±0.02 ^a	1.31±0.02 ^a	1.34±0.01 ^a	1.33±0.00 ^a	1.31±0.02 ^a
	7 d	1.29±0.02 ^a	1.26±0.05 ^a	1.27±0.03 ^a	1.31±0.00 ^a	1.23±0.06 ^a
	14 d	1.32±0.00 ^a	0.87±0.13 ^a	0.97±0.16 ^a	0.91±0.08 ^a	1.04±0.12 ^a
	21 d	1.33±0.00 ^a	1.09±0.07 ^{ab}	1.11±0.05 ^{ab}	0.96±0.12 ^b	0.94±0.09 ^b

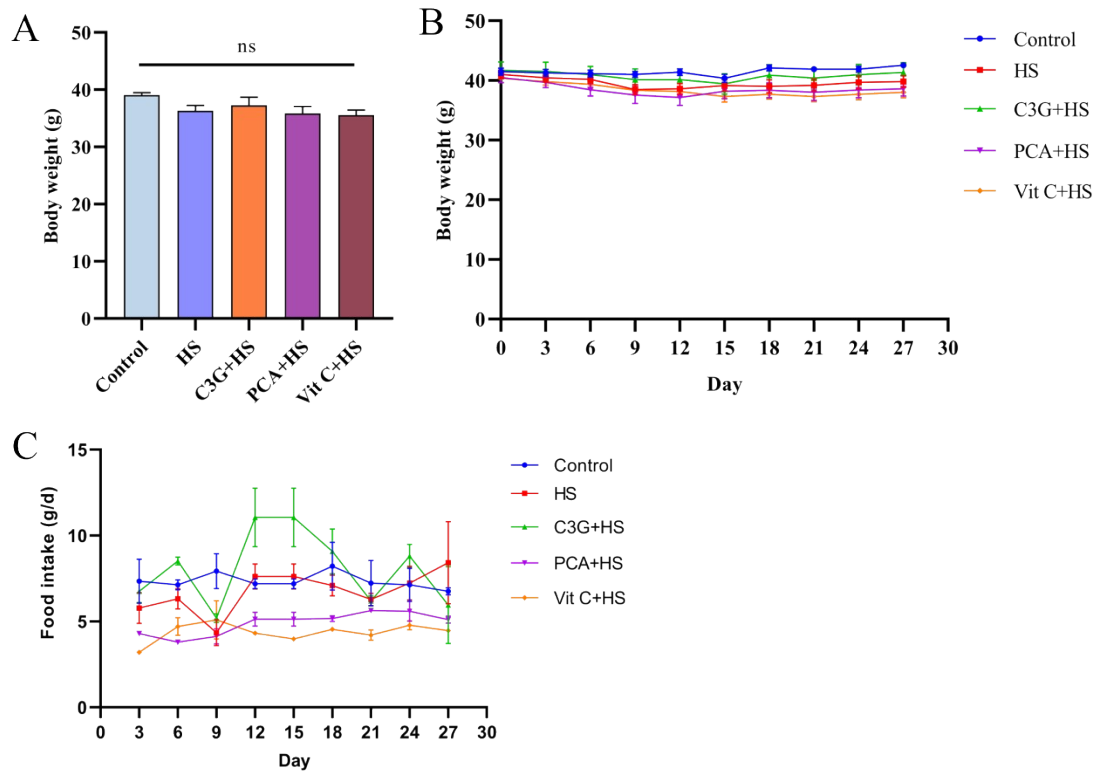
23 *Comparison between all groups was evaluated through One-way ANOVA. Data were shown as
 24 Mean ± SEM. n=7 at day 0 and day 2, n=12 at day 7, day 14, and day 21. Different letters indicate

25 a significant difference between the groups at the equal treating time point.



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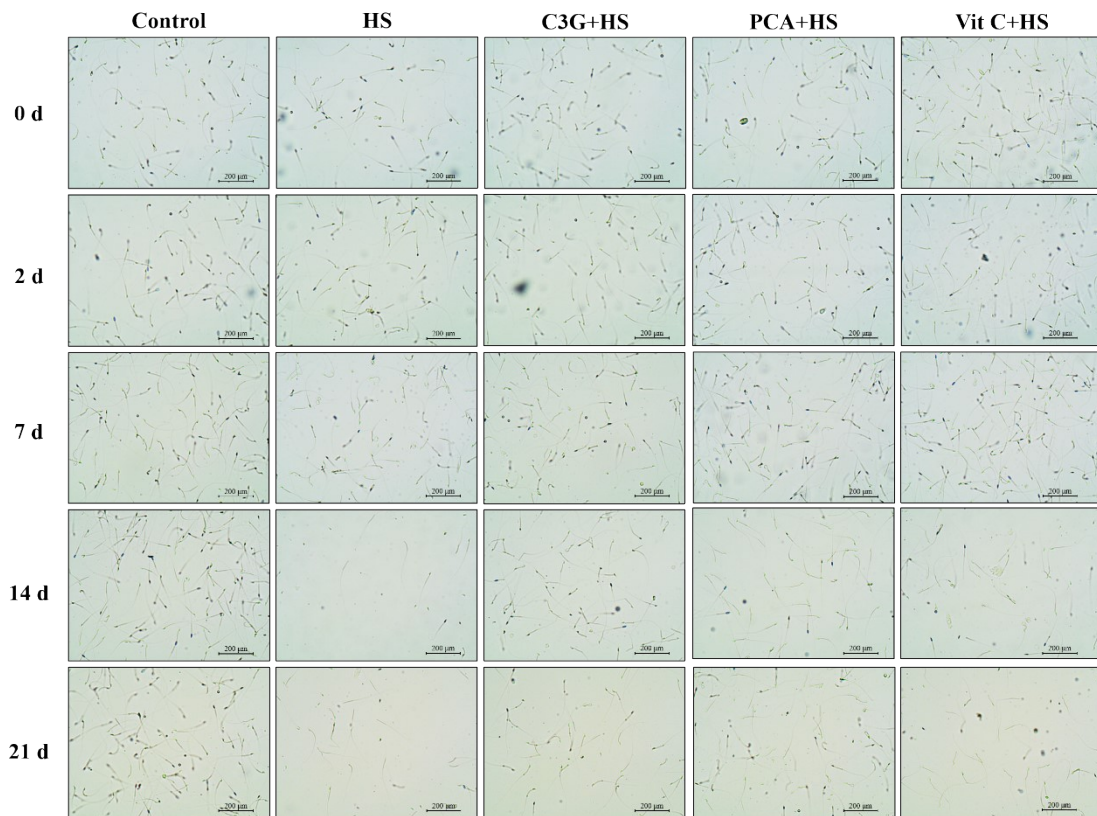
27 **Figure S1.** The representative H&E staining histopathology of epididymis



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29 **Figure S2.** The changes of body weight and food intake. (A) The terminal body weight
 30 of mice at day 21. (B) The changes of body weight during the whole processing at day
 31 21. (C) The changes of food intake during the whole processing at day 21. Comparison
 32 between all groups was evaluated through One-way ANOVA. Data were shown as
 33 Mean \pm SEM. n=12. Different letters indicate a significant difference.

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36 **Figure S3.** The sperm captures during different period by CASA