Supplemental Table 1: The motility parameters on the effect of gallocatechin on post-thaw cryopreserved ovine semen (mean ± SE) by CASA.

Parameter*	Gallocatechin (µM)					P-value
	Control (0)	**12.5**	**25**	**50**	**100**	
TM. (%)	48.70^{a} ± 3.00	50.62^{a} ± 3.30	44.24^{b} ± 3.20	42.52^{b} ± 2.44	40.72^{b} ± 2.68	0.01
PRG. (%)	19.19 ± 1.50	19.89 ± 1.58	19.78 ± 1.80	18.80 ± 1.40	17.31 ± 1.37	0.509
RAPID (%)	25.78 ± 1.86	28.35 ± 2.28	25.43 ± 2.23	24.20 ± 1.76	22.78 ± 1.65	0.070
VAP (µm/s)	89.31^{c} ± 1.54	92.62^{b} ± 1.63	94.90^{ab} ± 1.93	95.76^{ab} ± 2.02	97.29^{a} ± 2.04	0.001
VSL (µm/s)	72.36^{d} ± 2.03	74.26^{c}± 1.48	77.94^{bc}± 1.89	79.43^{ab} ± 2.16	80.95^{a} ± 2.18	0.001
VCL (µm/s)	152.74 ± 2.53	187.12 ± 28.03	159.67 ± 2.94	159.87 ± 3.02	161.89 ± 2.68	0.340
ALH (µm)	7.09 ± 0.08	7.20 ± 0.09	7.09 ± 0.08	7.01 ± 0.09	7.06± 1.00	0.273
BCF (Hz)	34.06^{c} ± 0.57	34.19^{bc} ± 0.45	34.63^{bc} ± 0.50	35.19^{b} ± 0.67	36.27^{a} ± 0.39	0.001
STR (%)	75.61^{a} ± 0.54	74.44^{b} ± 0.51	76.17^{a} ± 0.49	76.89^{a} ± 0.61	75.90^{a} ± 0.25	0.01
LIN (%)	46.52^{ab} ± 0.78	45.02^{b} ± 0.46	46.93^{a} ± 0.47	47.91^{a} ± 0.63	47.59^{a} ± 0.73	0.01

$^{a, b}$ Means within rows with different superscripts are significantly different ($p \leq 0.001$), and as a trend $p \leq 0.01$

*TM: total motility, PRG: progressive motility, VAP: average path velocity, VSL: progressive velocity, VCL: curvilinear velocity, ALH: lateral displacement velocity, BCF: beat cross frequency, STR: straight-line velocity, and LIN: linearity.

Supplemental Table 2: The viability parameters (live/dead, capacitation, mitochondrial potential and ROS) on the effect of gallocatechin on post-thaw cryopreserved ovine sperm (mean ± SE) by flow cytometry.

Parameters	Assay	Gallocatechin (µM)					P-value
		Control (0)	12.5	25	50	100	
Live (%)	Live ability	$17.71^{b} \pm 1.80$	$18.74^{b} \pm 1.81$	$21.99^{a} \pm 2.06$	$19.07^{b} \pm 1.61$	$18.80^{b} \pm 1.40$	0.001
Dead (%)		$70.56^{a} \pm 2.45$	$68.80^{ab} \pm 2.47$	$65.63^{c} \pm 2.43$	$68.64^{b} \pm 2.39$	$72.95^{a} \pm 1.88$	0.001
Dead Spermatozoa	Capacitation	$64.63^{b} \pm 2.03$	$63.30^{b} \pm 2.05$	$59.22^{d} \pm 2.13$	$61.72^{c} \pm 2.36$	$67.12^{a} \pm 1.55$	0.001
Viable + destabilized membrane		$14.82^{b} \pm 1.26$	$16.32^{b} \pm 1.19$	$20.34^{a} \pm 1.39$	$18.46^{a} \pm 1.17$	$16.33^{b} \pm 1.17$	0.001
Viable + stable membrane		$20.41^{a} \pm 1.38$	$20.16^{a} \pm 1.57$	$20.08^{a} \pm 1.48$	$19.75^{a} \pm 1.68$	$16.43^{b} \pm 1.30$	0.001
High mitopotential	MP	$4.18^{a} \pm 1.79$	$4.25^{a} \pm 1.80$	$4.08^{a} \pm 1.87$	$4.21^{a} \pm 1.78$	$3.51^{b} \pm 1.39$	0.05
Low mitopotential		$83.40^{b} \pm 3.47$	$83.56^{b} \pm 3.45$	$87.72^{a} \pm 2.64$	$83.14^{b} \pm 3.30$	$84.61^{b} \pm 3.23$	0.01
High ROS	ROS	$24.66^{b} \pm 1.10$	$25.68^{b} \pm 0.87$	$26.45^{ab} \pm 1.10$	$26.03^{ab} \pm 1.13$	$26.84^{a} \pm 0.72$	0.05
Low ROS		74.21 ± 1.18	72.98 ± 1.04	72.25 ± 1.22	72.89 ± 1.20	72.84 ± 0.82	0.095

[a, b] Means within rows with different superscripts are significantly different ($p \leq 0.001$).

Supplemental Table 3: The viability parameters (acrosomal integrity) on the effect of gallocatechin on the cryopreserved ovine sperm (mean ± SE) by flow cytometry.

Parameters	Gallocatechin (µM)					P-value
	Control (0)	12.5	25	50	100	
Viable intact acrosome	$25.10^{b} \pm 2.39$	$25.69^{b} \pm 2.18$	$28.54^{a} \pm 2.42$	$26.06^{b} \pm 2.33$	$22.93^{c} \pm 1.65$	$p \leq 0.001$
Viable damaged acrosome	$1.03^{c} \pm 0.08$	$1.19^{c} \pm 0.12$	$1.43^{b} \pm 0.14$	$1.51^{ab} \pm 0.14$	$1.65^{a} \pm 0.14$	$p \leq 0.001$
Non-viable intact acrosome	$30.73^{ab} \pm 1.37$	$29.39^{b} \pm 1.32$	$31.11^{ab} \pm 1.24$	$28.63^{b} \pm 1.22$	$32.46^{a} \pm 1.06$	$p \leq 0.01$
Non-viable damaged acrosome	$43.15^{a} \pm 2.11$	$43.73^{a} \pm 2.09$	$38.92^{b} \pm 1.97$	$43.79^{a} \pm 2.50$	$42.97^{a} \pm 2.01$	$p \leq 0.001$

[a, b] Means within rows with different superscripts are significantly different.

Supplemental Table 4: CASA analysis and capturing setting setup.

Apply Sort:	0
Frames Acquired:	30
Frame Rate:	60 Hz
Minimum Contrast:	40
Minimum Cell Size:	5 Pixels
Minimum Static Contrast:	15
Straightness (STR), Threshold:	80,0 %
Vap Cutoff:	21,9 pm/s
Prog. Min VAP:	75,0 pm/s
VSL Cutoff:	6,0 pm/s
Cell Size:	5 Pixels
Cell Intensity:	45
Static Head Size:	0,60 to 8,00
Static Head Intensity:	0,25 to 1,50
Static Elongation:	*0* to 95
Slow Cells Motile:	NO
Magnification:	1,89
Video Frequency:	60
Bright Field:	NO
LED Illumination Intensity:	2169
IDENT Illumination Intensity:	3000
Temperature, Set:	37,0 °C
Chamber depth:	20,0 pm
Chamber position:	3,9 mm
Chamber position B:	11,8 mm
Chamber position C:	18,7 mm
Chamber position D:	26,6 mm
Chamber type:	Leja4
Field Selection Mode:	SELECT
IDENT Fluorescent Option:	OFF
Integrating Time:	1 Frames
Remote image recall:	NO

[#]Supplemental Table S 1: Interaction effect of *Acacia mearnsii* tannin fraction (MTE0) and gallocatechin Mean ± SE on ovine chilled semen motility.

Parameters	**Treatments(µM)**			**P-value**
	Control	**Galcat.**	**MTE0**	
TM (%)	2.0 ± 0.58 [b]	7.5 ± 0.96 [a]	2.5 ± 0.87 [b]	0.05
PROG. (%)	3.0 ± 3.0 [ab]	0.75 ± 0.25 [b]	6.25 ± 1.25 [a]	0.05
RAPID (%)	0.33 ± 0.33 [b]	1.25 ± 0.25 [a]	0.0 ± 0.0 [b]	0.05
VAP (µm/s)	56.73 ± 7.47 [a]	51.28 ± 0.88 [b]	50.20 ± 3.05 [b]	0.439
VSL (µm/s)	39.20 ± 3.56 [a]	35.43 ± 1.30 [b]	30.63 ± 1.42 [ab]	0.079
VCL (µm/s)	106.67 ± 20.03 [a]	98.65 ± 2.21[bc]	104.18 ± 5.83 [b]	0.183
ALH (µm)	8.90 ± 1.57 [a]	8.05 ± 0.33 [a]	7.05 ± 0.28 [ab]	0.494
BCF (Hz)	21.00 ± 3.11 [b]	28.73[a] ± 1.37 [a]	29.18 ± 0.80 [a]	0.05
STR (%)	67.67 ± 3.67 [ab]	66.00 ± 2.48 [ab]	60.50 ± 0.65 [b]	0.212
LIN (%)	39.33 ± 5.23 [ab]	37.75 ± 1.97 [ab]	32.75 ± 0.48 [b]	0.132

Values within rows with different superscript are different at p≤0.001, TM: total motility; PROG: progressive motility; VAP: average path velocity; BCF: beat cross frequency; VCL: curvilinear velocity; ALH: lateral displacement velocity; LIN: linearity; VSL: progressive velocity; and STR: straight-line velocity.
[#]Analysis of commercial *Acacia mearnsii* extracts to investigate the potential use of flavonoid constituent as antioxidant with effect on ovine semen (pilot trial).

[#]Supplemental Table S 2: Interaction effect of *Acacia mearnsii* tannin fraction (MTE0), and gallocatechin Mean ± Standard Error (SE) on ovine chilled semen viability, significant levels.

Parameters		Treatments (µM)			P-value
		Control	Galcat.	MTE0	
Live (%)	Live ability	7.69 ± 0.08 [b]	24.42 ± 1.41 [a]	9.87 ± 1.08 [b]	0.001
Dead (%)		49.32 ± 2.53 [a]	48.15 ± 1.74 [a]	30.52 ± 5.82 [b]	0.01
Dead Spermatozoa	Capacitation	63.86 ± 3.02 [a]	51.15 ± 0.76 [a]	30.72 ± 6.11 [b]	0.001
Viable and destabilised membrane		16.48 ± 0.60 [b]	21.81 ± 0.85 [b]	54.03 ± 7.98 [b]	0.001
Viable and stable membrane		15.46 ± 1.84 [b]	24.90 ± 1.42 [a]	14.14 ± 1.83 [b]	0.001
Disrupted	*MP	73.36 ± 9.35 [a b]	90.43 ± 0.34 [a]	59.92 ± 7.97 [b]	0.05
Intact		25.39 ± 9.04 [a b]	8.64 ± 0.33 [b]	38.49 ± 7.67 [a]	0.05
****ROS (-) membrane impermeable**	**ROS	17.57 ± 0.80 [b]	16.43 ± 0.64 [b]	52.78 ± 4.36 [a]	0.001
****ROS (+) membrane permeable**		63.12 ± 3.05 [a]	48.26 ± 1.80 [b]	30.00 ± 6.05 [c]	0.001
****ROS (+) Membrane intact**		18.83 ± 2.37 [b]	32.53 ± 1.59 [a]	16.15 ± 2.29 [b]	0.001
Dead		63.32 ± 2.8 [a]	51.08 ± 1.50 [a]	30.95 ± 6.13 [b]	0.001

[a, b] Means within rows with different superscript are significantly different at $p \leq 0.001$.
*MP: Mitochondrial membrane potential **ROS: Reactive oxygen species
[#]Analysis of commercial *Acacia mearnsii* extracts to investigate the potential use of flavonoid constituent as antioxidant with effect on ovine semen (pilot trial).