

Table 1. Chemical analysis of Tris extender used in the experiment

Parameters	Unit	Tris extender exposure to magnetic force (gauss)			
		(G0) 0.0	(G1) 5000	(G2) 6000	(G3) 7000
pH	--	7.55	7.72	7.69	7.81
Conductivity	Ms/cm	1543	1712	1715	1716
Salinity	Mg /l	390	416	420	423
Boiling point	°C	98.7	99.3	100.2	102.1
Dissolved oxygen	ppm	6.7	7.4	7.5	7.5
Total hardness	ppm	450	468	470	471
Sodium (Na ⁺)	ppm	6.1	6.7	6.8	6.8
Potassium (K ⁺)	ppm	1.6	1.7	1.7	1.8
Calcium (Ca ²⁺)	ppm	112.7	119.8	120.1	120.2
Magnesium (Mg ²⁺)	ppm	104.7	112.4	112.4	112.6
Chloride (Cl ⁻)	ppm	2.4	2.1	2.2	2.2
Carbonate (Co ₃ ⁻)	ppm	3.9	5.1	5.3	5.3
Bicarbonate (Hco ₃ ⁻)	ppm	25.5	28.1	28.1	28.3
Organic matter	ppm	49	35	34	33

Table 2. Effect of magnetic extender on V-line semen rabbit characteristics during cryoprotectent period at 5°C for 72 hours

Items	Cryoprotectant period (hours)	Magnetic force (gauss)				Mean effect of magnetic exposure
		(G0) 0.0	(G1) 5000	(G2) 6000	(G3) 7000	
Advanced sperm motility %	0	83.33 ±1.67	86.67± 1.67	86.67± 1.67	85.05± 2.88	85.42 ^A ±1.0
	24	68.33 ±1.67	76.67 ±1.67	80.00 ±2.89	73.34 ±1.67	74.58 ^B ± 1.6
	48	60.00 ±2.89	71.67 ±1.67	73.33 ±1.67	65.00± 2.87	67.50 ^C ±1.9
	72	45.00± 2.89	68.33 ±1.67	71.67 ±3.33	60.21 ±2.88	61.25 ^D ± 3.3
Mean effect of time		64.17 ^c ±4.3	75.83 ^a ±2.2	77.92 ^a ± 2.1	70.83 ^b ±3.1	
Dead sperm %	0	11.67± 0.88	10.67± 0.58	12.00± 1.73	11.05± 1.73	11.17 ^D ± 0.6
	24	17.33 ± 1.45	14.67± 1.45	12.00 ± 1.53	22.00± 1.53	16.50 ^C ± 1.3
	48	23.33 ±1.67	20.67± 0.67	17.00± 0.58	25.67± 0.89	21.67 ^B ± 1.1
	72	33.67± 1.86	24.67± 2.03	17.33± 1.45	30.02± 0.58	26.42 ^A ± 2.0
Mean effect of time		21.50 ^a ±2.5	17.50 ^b ± 1.8	14.58 ^c ± 1.0	22.16 ^a ± 2.2	
Sperm abnormalities %	0	9.00± 0.58	10.67± 0.88	10.00± 0.58	12.17± 0.58	10.42 ^D ± 0.4
	24	14.00± 1.15	13.67 ±0.88	11.00 ± 1.53	14.67 ±0.88	13.33 ^C ± 0.6
	48	21.33± 1.86	17.00 ±1.15	16.33 ±1.86	15.67± 0.88	17.58 ^B ± 0.9
	72	26.67 ±1.67	20.33 1.45	19.01 ± 1.15	20.12± 0.57	21.50 ^A ±1.1
Mean effect of time		17.75 ^a ± 2.1	15.42 ^b ± 1.2	14.08 ^c ± 1.3	15.65 ^b ±1.0	
Acrosomal damages %	0	14.33 ±1.20	11.00± 0.58	11.00 ±0.58	8.33± 0.88	11.17 ^D ±0.7
	24	16.67 ±0.88	15.33± 0.88	13.00± 0.57	11.34± 0.88	14.08 ^C ±0.7
	48	22.67± 1.45	23.00± 1.53	18.67± 0.88	12.33± 0.88	19.16 ^B ±1.4
	72	25.33± 0.88	24.00± 0.58	20.00± 0.58	15.34± 0.88	21.17 ^A ±1.2
Mean effect of time		19.75 ^a ± 1.4	18.33 ^b ± 1.7	15.67 ^c ±1.2	11.83 ^d ± 0.8	

Means in each classification within the same row (a,b,c,d) or the same column (A,B,C,D) within each parameter bearing different letter superscripts are significantly different (P≤0.05).

Table 3. Effects of magnetized extender semen V-line rabbits on total anti-oxidant, catalase and malondialdehyde during cryoprotectant period at 5°C for 72 hours

Items	Cryoprotectant period (hours)	Magnetic force (gauss)				Mean effect of magnetic exposure
		(G0) 0.0	(G1) 5000	(G2) 6000	(G3) 7000	
Total anti- oxidant capacity (TAC) (mM/L)	0	1.27±0.09	1.67±0.02	1.76±0.03	2.02±0.04	1.68 ^A ±0.08
	24	1.02±0.06	1.56±0.03	1.60±0.03	1.83±0.03	1.50 ^B ±0.09
	48	0.78±0.03	1.42±0.03	1.48±0.02	1.71±0.02	1.35 ^C ±0.11
	72	0.67±0.03	1.31±0.06	1.22±0.05	1.37±0.09	1.14 ^D ±0.09
Mean effect of time		0.93 ^c ±0.07	1.49 ^b ±0.04	1.52 ^b ±0.06	1.73 ^a ±0.08	
<u>Catalase activity (CAT)U/mL</u>	0	25.57±0.15	27.37±0.15	26.07±0.32	33.73±0.07	28.18 ^A ±0.99
	24	23.78±0.19	26.43±0.20	25.63±0.37	32.10±0.23	26.98 ^B ±0.94
	48	22.23±0.24	25.57±0.09	24.93±0.09	30.90±0.25	25.91 ^C ±0.95
	72	21.67±0.22	25.80±0.06	24.07±0.22	27.30±0.74	24.71 ^D ±0.96
Mean effect of time		23.31 ^d ±0.6	26.29 ^b ±0.3	25.18 ^c ±0.3	31.00 ^a ±0.7	
<u>Malondialdehyde (MAD) (nm/L)</u>	0	3.45±0.03	3.10±0.01	2.92±0.04	2.86±0.04	3.08 ^C ±0.07
	24	3.59±0.00	3.22±0.01	3.02±0.04	2.98±0.03	3.17 ^B ±0.09
	48	3.69±0.00	3.47±0.02	3.11±0.06	3.02±0.04	3.32 ^A ±0.08
	72	3.81±0.00	3.59±0.05	3.19±0.04	3.12±0.01	3.37 ^A ±0.09
Mean effect of time		3.64 ^a ±0.04	3.31 ^b ±0.05	3.03 ^c ±0.03	2.96 ^d ±0.04	

Means within the same row (a,b,c,d) or the same column (A,B,C,D) within each parameters bearing different letter superscripts are significantly different (P≤0.05).