

Supporting information

Manuscript Title: The possible involvement of oxidative stress in the oocyte ageing process in goldfish *Carassius auratus* (Linnaeus, 1758)

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S1 Table. Embryo survival rates during *in vitro* oocyte ageing in goldfish.

S2 Table. mRNA abundance of the selected transcripts relative to *b-actin* during *in vitro* oocyte ageing in goldfish.

S3 Table. Activities of catalase (CAT) ($\mu\text{mol}/\text{min}/\text{mg}$), superoxide dismutase (SOD) ($\mu\text{mol}/\text{min}/\text{mg}$), glutathione reductase (GR) ($\mu\text{mol}/\text{min}/\text{mg}$) and glutathione peroxidase (GPX) ($\mu\text{mol}/\text{min}/\text{mg}$) during *in vitro* oocyte ageing in goldfish.

S4 Table. TBARS values, expressed as malonaldehyde (MDA) ($\mu\text{g g}^{-1}$) during *in vitro* oocyte ageing in goldfish.

S1

Treatment (HPS)	Replicate	Embryo survival%
1 (0)	1	61.64
1 (0)	2	60.07
1 (0)	3	63.04
1 (0)	4	46.56
1 (0)	5	72
1 (0)	6	48.8
2 (3)	1	75
2 (3)	2	56.16
2 (3)	3	68.08
2 (3)	4	40.76
2 (3)	5	57.56
2 (3)	6	52.87
3 (6)	1	32.97
3 (6)	2	46.85
3 (6)	3	41.66
3 (6)	4	40
3 (6)	5	39.61
3 (6)	6	34.16
4 (9)	1	13.84
4 (9)	2	12.55
4 (9)	3	26.6
4 (9)	4	37.32
4 (9)	5	21.53
4 (9)	6	14.28
5 (12)	1	5.05
5 (12)	2	6.5
5 (12)	3	15.32
5 (12)	4	12.8
5 (12)	5	0.99
5 (12)	6	4.46
6 (18)	1	0
6 (18)	2	0
6 (18)	3	0
6 (18)	4	0
6 (18)	5	0
6 (18)	6	0

S2

Treatment (HPS)	Replicate	hsp70	cox1	sod	sod Mn	sod Cu/Zn	calmodulin
1 (0)	1	0.050267	0.869758	-1.51327	0.860359	-1.015541	-0.476953
1 (0)	2	0.139496	0.433053	-1.02417	1.102295	-0.868605	0.06721303
1 (0)	3	0.190916	-0.26323	-1.31739	0.641912	-1.418988	-0.2959259
1 (0)	4	0.195873	0.754747	-0.9642	0.665338	-1.430562	-0.1568284
1 (0)	5	0.234278	-0.77353	2.106889	-0.38766	1.9664395	1.21774093
1 (0)	6	-0.80083	-0.99765	2.702657	-2.84068	2.8084186	-0.362354
2 (3)	1	0.70235	1.002	-0.81426	0.896061	-0.964839	-0.0941183
2 (3)	2	0.231969	0.56452	-0.69561	0.992954	-0.912946	0.20644253
2 (3)	3	-0.0817	-0.33128	-1.20199	0.464486	-1.886414	-0.1229443
2 (3)	4	-0.03885	0.355608	-1.10909	0.881358	-1.454542	-0.0702056
2 (3)	5	-0.97593	-1.43727	1.924179	-2.19951	2.0995882	-1.243279
2 (3)	6	-1.23816	-1.15931	2.502455	-1.71751	3.1415889	0.55953598
3 (6)	1	-0.21188	0.737804	-1.47521	0.37187	-1.92403	-0.5589187
3 (6)	2	0.235596	1.268157	-0.62718	0.968934	-1.741966	0.40156594
3 (6)	3	-0.138	-0.47792	-0.97029	0.34838	-1.01752	0.37696535
3 (6)	4	-0.14287	0.726087	-0.72935	0.696933	-1.213967	-0.189523
3 (6)	5	-1.14136	-1.01295	2.172121	-1.59492	1.9041845	1.2420725
3 (6)	6	-0.80096	-0.47111	1.552746	-1.92951	1.4595887	1.70762643
4 (9)	1	-0.0089	0.549967	-1.35431	0.817784	-1.283116	-0.2855578
4 (9)	2	0.18107	0.240621	-0.6675	1.348614	-0.712286	0.549242
4 (9)	3	-0.365	-0.53657	-0.74413	0.668124	-1.027776	-0.1546122
4 (9)	4	-1.75425	-1.5545	2.010123	-2.82315	2.2659505	-0.9265028
4 (9)	5	-0.02313	-0.88251	2.398496	-2.15687	2.3572274	1.91955522
4 (9)	6	-0.2598	-0.55144	1.511848	-1.94894	1.0301635	1.02606814
5 (12)	1	0.068114	0.526222	-1.36582	0.778423	-0.952477	-0.6413425
5 (12)	2	0.092824	0.399561	-0.45111	0.580338	-0.785562	0.44418771
5 (12)	3	0.061447	-0.38601	-0.80903	0.415295	-1.330605	-0.0545853
5 (12)	4	-0.90351	-1.28276	1.388776	-2.20766	1.94144	0.66918175
5 (12)	5	-0.74648	-1.58101	1.599358	-2.53851	1.5655883	-1.0757479
5 (12)	6	-1.85659	-0.77848	2.304757	-1.66134	2.1277591	-0.1283719
6 (18)	1	-0.32718	0.554807	-1.02918	0.881295	-0.504605	-0.4889294
6 (18)	2	-0.19327	0.866257	-0.64955	0.870253	-0.810647	0.19533457
6 (18)	3	-0.23186	-0.50516	-1.03043	0.372571	-1.263329	0.59457371
6 (18)	4	-0.64643	-0.53172	1.997985	-1.14715	2.0269511	1.49397953
6 (18)	5	-0.614	-1.30907	1.882733	-3.13236	2.0917379	0.90065227
6 (18)	6	-0.10279	0.000907	2.091674	-0.81821	2.2358868	2.07754658

vasa	igf2	cathepsin B	cyclin A	cyclin A2	cyclin B	jnk 1
0.112338	0.304728	-1.52474066	-0.34554	0.757859	1.346159	0.871959
0.849542	-1.056	0.08219484	-0.12861	-0.08521	0.253095	0.863895
0.848184	0.149996	-0.80318834	-0.54399	-0.01559	-0.01229	0.293512
0.275606	-1.76842	-0.29976222	-0.44556	0.297838	-0.63386	0.281938
-0.57258		1.97723948	1.406439	0.594839	0.458139	-1.30106
-1.51663	-0.13958	0.60921862	0.098419	-1.50818	-1.36988	-0.96908
1.328286	-0.64051	-1.45403898	-0.14484	0.473561	0.476861	0.027661
0.73531	-0.67961	0.03785439	-0.00795	0.405454	0.238754	0.944554
0.68617	-0.54891	-1.33061386	-0.82141	-0.26301	-0.63971	-0.37891
0.548172	-1.63443	-0.40374156	-0.32954	0.463858	-0.73284	0.077958
-1.42839		0.15038824	-0.02541	-2.49201	-1.66371	-1.11291
-0.31553	0.224825	1.20238895	0.621589	-0.71501	-0.85171	-0.92091
-0.06291	-0.07336	-2.35323047	-1.00903	0.36937	-0.06733	-0.15653
0.85483	-1.22916	-0.22616607	-0.38197	0.371434	-0.19527	0.325534
0.819555	-0.35943	-0.78672029	-0.66752	-0.22412	-0.05082	0.41998
0.580144	-2.05827	-0.36316678	-0.63397	0.399433	-0.84727	0.238533
-2.02016		2.17998449	1.714184	0.597584	0.915884	-1.75332
-0.52301	0.243244	2.11538875	1.744589	0.657989	0.556289	-0.53291
0.431666	-0.25072	-1.65231564	-0.47312	0.370284	0.473584	0.484384
1.234746	-1.08782	0.09851393	0.102714	0.301114	0.089414	0.845214
0.51509	-0.09142	-0.76697558	-0.38778	-0.05938	0.028924	0.189724
-1.24998		-0.21824953	-0.13405	-2.58565	-1.77735	-0.19655
-1.46155		2.61802743	1.897227	1.800627	2.078927	-1.43027
-1.51382	1.504848	1.43096353	0.945164	-0.07644	-0.27314	-0.98734
0.063951	-0.38799	-1.57667716	-0.51248	0.450923	0.674223	0.885023
1.068884	-1.8895	-0.12976222	-0.12056	-0.10216	-0.09386	0.306938
0.741838	-0.26751	-0.86480536	-0.54561	-0.13221	-0.18391	-0.05311
-2.05702		1.09223998	1.02644	-0.68516	-0.37686	-0.53106
-2.5894		0.41638834	0.520588	-2.42101	-1.31271	-0.36191
-2.03602	1.019325	0.83355907	0.477759	-1.16384	-1.30554	-0.47974
0.136964	0.616816	-1.09380476	-0.0096	0.808795	0.937095	0.992895
0.30207	-1.39174	-0.26484699	-0.28565	0.207753	-0.08395	0.566853
0.549353	-0.64567	-1.0575288	-0.73333	-0.18493	-0.35663	0.139171
-0.81212		1.92275107	1.366951	0.335351	0.048651	-1.38555
-1.4927		1.95753791	1.166738	0.800138	0.948438	-1.36576
-0.28652	1.000588	2.57168677	2.020887	0.754287	0.762587	0.008387

S3

Treatment (HPS)	Replicate	CAT μmol/min/mg	SOD μmol NBT/min/mg protein
1 (0)	1	0.411466133	1.096355814
1 (0)	2	1.695267195	1.826670304
1 (0)	3	1.694066673	2.526039898
1 (0)	4	1.942217083	1.29150446
1 (0)	5	1.375894916	2.613261046
1 (0)	6	1.206655513	3.508959845
2 (3)	1	0.529470142	1.29618911
2 (3)	2	0.479338726	2.307315032
2 (3)	3	0.654184177	3.067576468
2 (3)	4	0.89617	1.647713044
2 (3)	5	0.271660732	3.258612837
2 (3)	6	0.615772067	4.013679637
3 (6)	1	1.24945689	1.27425438
3 (6)	2	0.700802439	2.093289372
3 (6)	3	0.326510827	1.295533987
3 (6)	4	0.113175645	1.346783271
3 (6)	5	1.400402078	2.123965152
3 (6)	6	2.798732433	3.613390895
4 (9)	1	0.495658509	1.550694226
4 (9)	2	1.027382818	2.296127607
4 (9)	3	1.655426119	1.787359376
4 (9)	4	2.117647059	2.059464479
4 (9)	5	1.837105536	2.794596296
4 (9)	6	1.901310502	3.331823205
5 (12)	1	0.48125068	1.90532593
5 (12)	2	0.744058571	1.753017446
5 (12)	3	1.395007599	2.065957443
5 (12)	4	1.249658603	2.74775399
5 (12)	5	0.657113207	3.97589555
5 (12)	6	0.832719808	3.68960531

GR	GPx
μmol/min/mg	nmol/min/mg
0.120935548	0.36631535
0.164344967	0.496486902
0.112627018	0.455716517
0.211403105	0.598363714
0.187954534	0.378061391
0.141075523	0.631339857
0.151205537	0.114044434
0.192949408	0.264637986
0.136151903	0.218964906
0.208635065	0.301440866
0.112669331	0.281262726
0.124402497	0.275897554
0.155922186	0.323167463
0.195752199	0.309506641
0.196224412	0.261114603
0.19902694	0.474782421
0.175977339	0.411304763
0.137185077	0.110812182
0.146462522	0.293659251
0.225812034	0.476889771
0.109835711	0.264810332
0.184846316	0.365846966
0.13783372	0.560347699
0.144328484	0.180046798
0.145359413	0.398964751
0.211768876	0.750625594
0.141073288	0.231253932
0.215604944	0.424127136
0.1344649	0.442574972
0.136933498	0.29310405

S4

Treatment (HPS)	Replicate	MDA ($\mu\text{g g}^{-1}$)
1 (0)	1	4.539081826
1 (0)	2	5.007880606
1 (0)	3	5.338477171
1 (0)	4	2.30006165
2 (3)	1	4.04709229
2 (3)	2	4.405366081
2 (3)	3	4.904474139
2 (3)	4	3.453459272
3 (6)	1	3.43994357
3 (6)	2	5.228767442
3 (6)	3	5.375611524
3 (6)	4	3.295700625
4 (9)	1	2.719702791
4 (9)	2	4.502378281
4 (9)	3	4.936112242
4 (9)	4	5.106876522
5 (12)	1	3.345348176
5 (12)	2	4.265465419
5 (12)	3	4.924423281
6 (18)	1	4.240334467
6 (18)	2	4.425549754
6 (18)	3	4.392858822