

Group	Open arms entries	Closed arms entries	Rears	Closed arms reentries	Open arms time	Closed arms time
C	7,75±0,83	5,12±1,57	22,87±1,93	7,75±1,38	73,13±6,37	206,45±9,62
G	2,37±0,75 (c)	4,00±0,77	5,00±0,59 (c)	2,25±0,64 (c)	37,87±4,36	254,84±4,92 (c)
H	2,36±0,73 (c)	2,50±0,37	5,50±1,05 (c)	1,37±0,49 (c,)	9,15±2,78 (c, \$\$)	270,52±5,29 (c,)
H+G	0,87±0,35 (c)	3,75±0,70	5,51±0,62 (c)	3,12±0,63 (c)	21,25±3,39 (c)	272,00±3,67 (c)
S1	9,25±0,59 (\$, \$\$)	10,62±0,59 (c,\$,\$\$)	18,12±1,21 (\$,\$\$)	5,62±0,49 (\$, \$\$)	49,56±3,41 (c,\$\$)	233,86±6,78 (\$\$,)
S2	3,25±0,36 (c, \$\$, cc)	6,87±0,61 (\$\$, aa)	7,37±0,65 (c, cc)	3,00±0,59 (c)	20,62±3,12 (c, **, cc)	254,01±7,76 (c)
S1+H	9,62±0,67 (\$)	8,62±0,65 (\$,\$\$)	14,62±1,25 (c, \$, \$\$)	6,25±0,75 (\$, \$\$)	43,12±3,29 (c,\$\$)	221,75±5,78 (*, \$\$)
S2+H	2,75±0,45 (c, cc)	4,00±0,70 (cc)	7,87±0,71 (c, cc)	3,37±0,32 (c)	16,87±2,20 (c, \$\$, cc)	245,51±5,22 (c)
S1G+H	8,37±0,56 (\$, \$\$)	8,25±0,88 (*,\$\$)	18,87±1,77 (\$, \$\$)	10,25±0,59 (\$, \$\$, cc)	35,62±3,04 (c, \$\$)	213,01±4,94 (\$, \$\$)
S2G+H	2,50±0,50 (c, cc)	3,87±0,44 (cc)	4,87±0,85 (c, cc)	5,12±0,47 (**)	16,87±2,22 (c, \$\$, cc)	245,51±7,74 (c)

Table 1. Elevated plus maze test. Animals were subjected to one of the following treatments. The data represent the mean ± SEM. , ^cp<0.001; vs control group. * p < 0.01, ^{\$}p < 0.001 vs corresponding treatment without “Glutamate ” group; **p<0.01, ^{\$\$}p<0.001 vs corresponding treatment without “H₂O₂” group; ^{aa}p< 0.001 , ^{cc}p< 0.001 vs “SiO₂ NPs” group.

Group	Centre time	Number of centre entries	Number of crossed peripheral quadrants	Number of contact with objects	Locomotion time in peripheral part	Immobility time in peripheral area	Rearing number
C	23,18±2,09	16,37±1,80	37,37±3,64	23,25±2,04	276,81±2,09	28,54±2,21	26,37±2,24
G	9,95±1,08 (c)	7,62±0,56 (c)	12,86±1,71 (c)	14,37±1,15 (a) (c)	290,05±1,08 (c)	93,33±1,88 (c)	9,00±1,55 (c)
H	4,91±0,94 (c, \$)	4,00±0,46 (c)	19,88±1,15 (c)	21,50±1,11 (c)	295,08±0,94 (c, *)	135,26±7,17 (c, *)	6,00±0,84 (c)
H+G	6,42±0,69 (c)	3,50±0,53 (c)	23,25±2,10 (c)	18,00±2,05 (c)	293,57±0,69 (c)	129,02±7,34 (c, \$)	7,25±0,55 (c)
S1	15,37±1,12 (c, \$, \$\$)	19,50±0,73 (\$, \$\$)	32,62±2,36 (\$, **)	26,75±1,14 (c, \$)	284,62±1,12 (c, \$, \$\$)	26,49±3,50 (\$, \$\$)	26,12±1,24 (c, \$, \$\$)
S2	3,38±0,49 (c, \$, cc)	10,12±0,51 (c, \$\$, cc)	24,38±1,41 (c, *)	24,25±1,12 (c, \$)	296,61±0,49 (c, \$, cc)	117,00±12,55 (c, cc)	5,62±0,82 (c, cc)
S1+H	9,43±0,89 (c, cc)	26,50±1,01 (c, \$, \$\$, cc)	27,37±1,53 (c)	26,38±1,36 (c, \$)	290,65±0,91 (c, cc)	31,44±2,44 (\$, \$\$)	25,87±2,16 (\$, \$\$)
S2+H	5,68±0,42 (c, cc)	2,25±0,36 (c, \$, cc)	20,00±4,48 (c, \$)	12,25±2,75 (c, \$\$, cc)	294,31±0,42 (c, cc)	118,49±20,06 (c, cc)	5,37±1,23 (c, cc)
S1G+H	10,12±0,89 (c, \$, cc)	20,87±1,24 (a, \$)	29,12±1,23 (c)	26,50±1,42 (c, \$)	289,88±0,89 (c, **, cc)	30,31±2,91 (\$, \$\$)	7,38±0,56 (c, cc)
S2G+H	5,30±0,31 (c, cc)	7,12±0,69 (c, cc)	24,00±1,52 (c, *)	27,12±1,41 (c, \$)	294,69±0,31 (c, cc)	131,55±10,23 (c, cc)	7,88±0,63 (c, cc)

Table 2. Open field test. The data represent the mean ± SEM.). ^ap<0.01, ^cp<0.001; vs control group. ^{*}p < 0.01, ^{\$}p < 0.001 vs corresponding treatment without “Glutamate ” group; ^{**}p<0.01, ^{\$\$}p<0.001 vs corresponding treatment without “H₂O₂” group; ^{cc}p< 0.001 vs “SiO₂ NPs” group.

Group	Day 1	Day 2	Day 3	Day 4
C	77,55±7,30	68,75±8,38	51,25±5,06	37,38±4,38
G	109,38±12,19	105,63±5,12 (c)	68,75±6,32	61,25±4,97 (c)
H	177,50±1,33 (c,\$)	128,13±9,01 (c)	119,38±9,65 (c,\$)	103,13±5,17 (c,\$)
H+G	113,75±6,32 (a,\$\$)	100,00±3,89 (c)	90,00±3,13 (c,\$\$)	67,50±2,83 (c,\$\$)
S1	91,00±7,74 (\$\$)	81,88±4,62	66,75±3,19 (\$\$)	61,88±4,42 (c,\$\$)
S2	151,25±10,80 (c,\$,cc)	123,75±5,32 (c,cc)	96,25±2,63 (c,\$,cc)	80,00±5,97 (c,\$\$)
S1+H	103,75±6,79 (\$\$)	86,88±4,32	66,25±3,09 (\$\$)	56,25±3,23 (\$\$)
S2+H	150,00±10,00 (c,\$,cc)	103,13±3,62 (c)	92,63±4,54 (c,\$\$,cc)	91,00±4,34 (c,\$,cc)
S1G+H	105,00±4,62 (\$\$)	93,13±5,79	80,63±5,71 (c,\$\$)	68,25±3,36 (c,\$\$)
S2G+H	168,38±4,94 (c,\$,cc)	136,75±7,12 (c,*,cc)	124,25±6,32 (c,\$,cc)	96,88±7,08 (c,\$,cc)

Table 3. Open field test. The data represent the mean ± SEM Escape latency to reach the platform during acquisition.). ^cp<0.001; ^vscontrol group. ^sp < 0.001 vs corresponding treatment without “Glutamate” group; ^{ss}p<0.001 vs corresponding treatment without “H₂O₂” group; ^{cc}p< 0.001vs “SiO₂ NPs” group.

Group	CA1	CA2	CA3	S	CPu	Fr
C	141,12±1,81	139,12±2,07	141±1,00	129,37±1,68	148,00±1,99	155,62±2,53
G	139,12±1,28	131,87±1,45	121,50±0,86	96,75±2,94 (c)	132,87±3,55	37,87±2,26
H	30,87±3,64 (c,\$)	28,25±1,54 (c,\$)	27,62±1,47 (c,\$)	25,00±0,77 (c,\$)	69,62±5,01 (c,\$)	86,50±3,54 (c,\$)
H+G	129,25±3,01 (\$\$)	125,00±1,51 (\$\$)	128,12±2,47 (\$\$)	129,75±1,20 (\$\$)	82,50±3,91 (\$\$)	107,00±5,15 (\$\$)
S1	136,00±0,86 (\$\$)	127,75±2,22 (\$\$)	135,62±2,83 (\$\$)	142,62±1,74 (\$\$)	150,25±3,56 (\$\$)	164,87±3,41 (\$\$)
S2	61,12±8,51 (c,\$\$,cc)	41,87±1,84 (c,\$\$,cc)	38,62±1,22 (c,\$\$,cc)	75,00±4,49 (c,\$\$,cc)	73,5±6,44 (c,\$\$,cc)	58,37±5,05 (c,\$\$,cc)
S1+H	141,87±1,02 (\$\$)	135,62±1,19 (\$\$)	130,50±1,16 (\$\$)	140,75±1,57 (\$\$)	133,25±7,04 (\$\$)	132,12±5,87 (\$\$)
S2+H	71,00±6,90 (c,\$\$,cc)	50,00±1,23 (c,\$\$,cc)	58,00±13,72 (c,\$\$,cc)	65,00±4,13 (c,\$\$,cc)	77,75±5,64 (c,\$\$,cc)	79,12±5,42 (c,\$\$,cc)
S1G+H	131,25±12,09 (\$\$)	125,50±14,41 (\$\$)	119,37±1,11 (\$\$)	129,75±9,75 (\$\$)	132,00±2,86 (\$\$)	127,87±1,97 (\$\$)
S2G+H	100±0,96 (\$\$)	95±1,22 (\$\$)	65±0,59 (c,\$\$)	63,25±5,99 (c,\$\$)	71,12±2,23 (c,\$\$)	95,50±3,45 (c,\$\$)

Table 4. Number of cells in different area brain: CA1, CA2, CA3, subiculum (S), caudate putamen (CPu) and frontal cortex (Fr).). ^cp<0.001; ^vscontrol group. ^sp < 0.001 vs corresponding treatment without “Glutamate ” group; ^{ss}p<0.001 vs corresponding treatment without “H₂O₂” group; ^{cc}p<0.001vs “SiO₂ NPs” group.

Group	CA1	CA2	CA3	S	CPu	Fr
C	0,00	0,00	0,00	0,00	0,00	0,00
G	3,87±0,63	3,12±0,44	8,12±0,63 (c)	9,50±0,80 (c)	1,12±0,12	21,50±1,50 (c)
H	32,25±1,97 (c,\$)	36,50±2,15 (c,\$)	27,75±0,70 (c,\$)	28,75±0,59 (c,\$)	12,13±0,58 (c,\$)	20,50±0,86 (c)
H+G	10,50±0,56 (c,\$)	5,37±0,59 (c,\$)	6,50±0,32 (c,\$)	6,00±0,46 (c,\$)	11,00±0,46 (c,\$)	0,00 (c,\$,\$\$,cc)
S1	0,00 (\$\$)	1,40±0,39 (\$\$)	1,20±0,31 (\$,\$\$)	0,50±0,26 (\$,\$\$)	0,00 (c,\$,\$\$,c)	0,00 (c,\$,\$\$,c)
S2	19,37±1,43 (c,\$,\$\$)	23,62±1,65 (c,\$,\$\$)	27,25±1,26 (c,\$,\$\$)	27,25±1,34 (c,\$,\$\$,cc)	0,00 (c,\$,\$\$,cc)	10,12±0,87 (c,\$,\$\$,cc)
S1+H	1,87±0,22 (\$\$)	2,13±0,22 (\$,\$\$)	1,25±0,36 (\$,\$\$)	4,62±3,77 (\$\$)	3,63±0,49 (c,\$,\$\$,cc)	0,00 (\$,\$\$)
S2+H	24,25±1,06 (c,\$,\$\$,cc)	19,12±0,85 (c,\$,\$\$,cc)	22,13±0,78 (c,\$,\$\$,cc)	19,00±1,94 (c,\$,\$\$,cc)	13,62±0,49 (c,\$,\$\$,cc)	10,25±0,59 (c,\$,\$\$,cc)
S1G+H	4,12±3,70 (\$\$)	3,25±2,40 (\$,\$\$)	2,50±2,50 (\$,\$\$)	2,50±2,50 (\$\$)	3,87±0,51 (c,\$,\$\$,cc)	0,00 (\$,\$\$)
S2G+H	6,13±0,51 (\$\$)	18,00±1,07 (c,\$,\$\$,cc)	6,50±1,18 (c,\$,\$\$,cc)	16,75±1,46 (c,\$,\$\$,cc)	7,25±0,59 (c,\$,\$\$,cc)	5,50±0,86 (c,\$,\$\$,cc)

Table 5. Apoptotic cell death in different area brain: CA1, CA2, CA3, subiculum (S), caudate putamen (CPu) and frontal cortex (Fr). ^cp<0.001; ^vscontrol group. ^{\$}p < 0.001 vs corresponding treatment without “Glutamate ” group; ^{\$\$}p<0.001 vs corresponding treatment without “H₂O₂” group; ^{ccc}p< 0.001vs “SiO₂ NPs” group.