XXIII Congreso Argentino de Toxicología
XL Jornadas Interdisciplinarias de Toxicología
IV Jornadas Iberoamericanas de Toxicología
III Encuentro Latinoamericano de Residentes
GENERANDO CONOCIMIENTO PARA UNA SALUD EQUITATIVA E INCLUSIVA

Iron oxide/silver hybrid nanoparticles impair the cholinergic system and cause reprotoxicity in *Caenorhabditis elegans*

Las nanopartículas híbridas de óxido de hierro y plata alteran el sistema colinérgico y causan reprotoxicidad en Caenorhabditis elegans

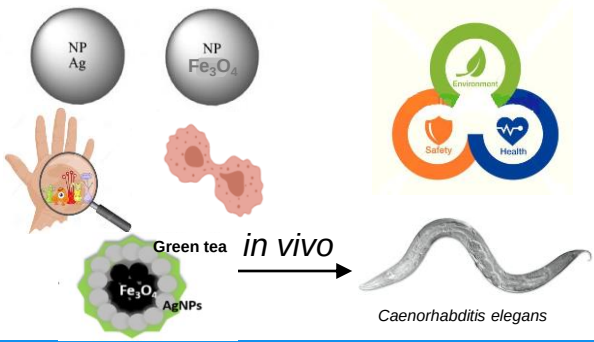
Silva, Aline Castro[1*]; dos Santos, Alisson Gleysson Rodrigues[1]; Pieretti, Joana Claudio[2]; Rolim, Wallace Rosado[2]; Seabra, Amedea Barozzi[2]; Ávila, Daiana Silva[1].

[1] Federal University of Pampa - Uruguaiana, Rio Grande do Sul, Brazil.

[1] Federal University of ABC – Santo André, São Paulo, Brazil.

*alinesilva.aluno@unipampa.edu.br

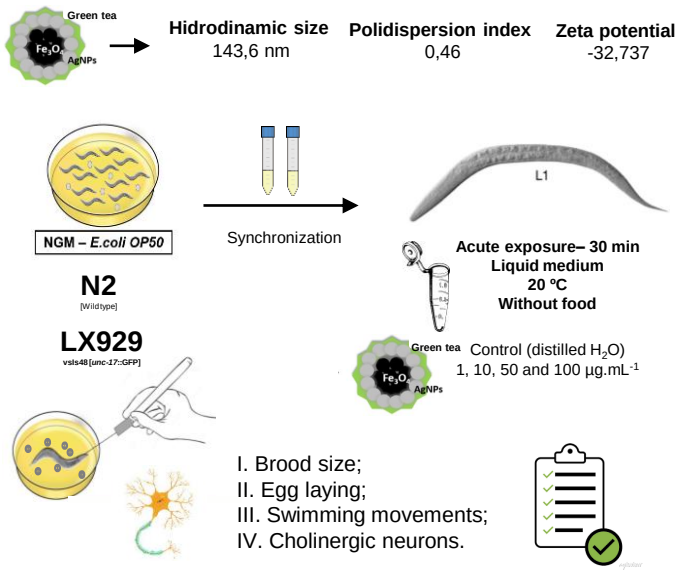
Introduction



Objective

To evaluate the toxic effects of acute exposure to Fe_3O_4@Ag-NPs synthesized biogenically in the alternative model *Caenorhabditis elegans.*

Material and Methods



Results

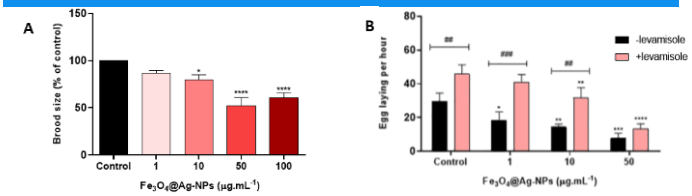


Figure 2. Reproduction. (A) Total brood size of worms exposed to Fe_3O_4@Ag-NPs (n=6) (N2). Data were expressed as mean ± standard error of mean (SEM). (*) Indicates a statistically significant difference in relation to the control group with **p<0.05, ****p <0.0001* by One-way ANOVA followed by Tukey's comparisons test. **(B) T**he egg-laying difference between worms with levamisole and without levamisole after exposure to Fe_3O_4@Ag-NPs in the first day adult (N2) (n=4). (#) Indicates statistically significant difference in relation to the (-) levamisole group with *##p<0.01, ###p<0.001, ####p<0.0001.* (*) Denotes statistically significant difference in relation to control with **p<0.05, **p<0.01* by Two-way ANOVA followed by Tukey's multiple comparisons test. Data were expressed as mean ± standard error of mean (SEM).

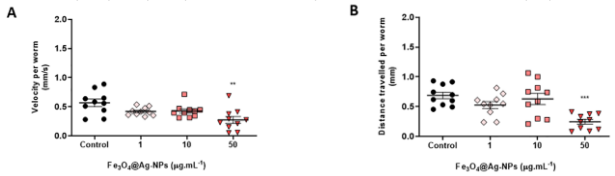


Figure 3. Swimming movements. (A) Velocity and (B) distance travelled by the worms during the swimming assay (1 min; N2; L4 stage) (n=10). Data were expressed as mean ± standard error of mean (SEM). For the velocity analysis (*) indicates a statistically significant difference in relation to the control group with ***p<0.01* by nonparametric Kruskal-Wallis test followed by Dunn's multiple comparison test. For the distance travelled analysis (*) denotes a statistically significant difference in relation to the control group with ***p<0.001* by One-way ANOVA followed by Tukey's multiple comparison test.

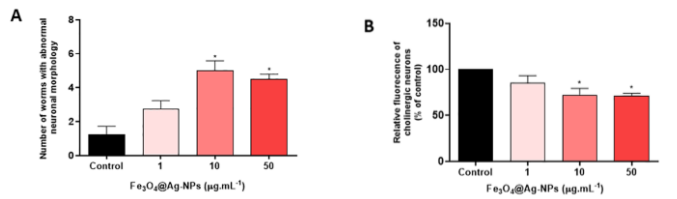


Figure 4. Cholinergic neurons. (A) Number of abnormalities and (B) fluorescence intensity of cholinergic (n=4) (LX929; L4 stage). Data in A and B were expressed as mean ± standard error of mean (SEM). For the number of abnormalities analysis (*) indicates a statistically significant difference in relation to the control group with **p<0.05* by nonparametric Kruskal-Wallis test followed by Dunn's multiple comparison test. For the analysis of fluorescence intensity of cholinergic neurons (*) denotes a statistically significant difference in relation to the control group with **p<0.05* by One-way ANOVA followed by Tukey's multiple comparison test.

Conclusion

Our results indicate the reprotoxicity caused by high levels of Fe_3O_4@Ag-NPs, as well as cholinergic neurotoxicity in *C. elegans*. To elucidate the mechanisms of toxicity of these NPs we evaluated other parameters.

SCAN ME