In the present work we design a gene therapy vehicle base on graphene oxide, citric acid and poly ethylene glicol diamine. Graphene oxide is a nanomaterial whose characteristics can be exploited and improved for gene delivery [1,2]. The functionalization with citric acid provides the graphene oxide a biocompatible character [3] and at the same time increases the binding sites of the PEGDA through an amide bond. On the other hand PEGDA provides the positive charge to its union with the DNA through ionic interactions.

First, we made the characterizations tests of each material obtained in order to verify the chemical modifications. Zeta potential of the samples were measured, we found that the binding of PEGDA increases the values of the zeta potential. Second we made citoxicity tests for the materials to know if they have an effect on cellular viability at different concentrations. Finally we observed retardation of DNA when Gel retardation assay was carried out after the incubation of GO-PEGDA and the DNA at different N/P ratios, significant retardation of DNA was observed at highs N/P ratios. In conclusion, we show that the materials synthesis were carried out successful and the final conjugate GO-PEGDA is able to interact with the DNA.

**Keywords:** Graphene oxide, Viability, Retardation

**References:**

