Green nanotechnology: stability and interactions of gold nanoparticles obtained with Annona muricata extract

Reference	Presenter	Authors (Institution)	Abstract
01-201	Jorge Gabriel dos Santos Batista	Batista, J.G. (Instituto de Pesquisas Energéticas e Nucleares); Freitas, L.F. (Instituto de Pesquisas Energéticas e Nucleares); da Cruz, C.C. (Instituto de Pesquisas Energéticas e Nucleares - IPEN); Lugao, A.B.(IPEN); Rodrigues, A.S. (Instituto de Pesquisa Energeticas e Nucleares); Santos, L.O. (Instituto de Pesquisa Energeticas e Nucleares); Pires, M.A. (Instituto de pesquisas energéticas e nucleares);	Cancer is among the diseases with the highest mortality rate, with more than 100 different types that occur due to mutations in the genetic material of cells. It is the third leading cause of death worldwide after cardiovascular and infectious diseases. In addition, the number of diseases caused by oxidative stress that results from an imbalance between the formation and neutralization of oxidizing species is increasingly perceived. Oxidative stress is initiated by free radicals and their interactions with biological macromolecules, such as proteins, lipids and DNA, healthy human cells and cause damage to proteins and DNA, with lipid peroxidation. These changes contribute to cancer, atherosclerosis, cardiovascular and inflammatory diseases. All cells are exposed to oxidative stress and therefore oxidation and free radicals play an important role in the development of cancer. Medicinal plants have a special place in cancer management. Several cancer researchers have been carried out studies using traditional medicinal plants, to discover new therapeutic agents that do not have side effects associated with chemotherapeutic agents. Studies using the extract of Annona muricata L., popularly known as araticum, have demonstrated potential anti-inflammatory and anticancer action, due to its antioxidant and immunological properties. The objective of the present work was to develop gold nanoparticles using Annona muricata L. dry extract and verify their physical-chemical characteristics, such as size, shape, and stability. The results obtained show that it is possible to synthesize gold nanoparticles with potential applications in medicine using the extract of araticum. Characterization was performed using the techniques of UV-Vis spectrophotometry, dynamic light scattering (DLS), transmission electron microscopy (TEM). The in vitro stability study of the gold nanoparticles synthesized with the araticum extract was carried out for thirty days. The nanoparticles showed to be stable in different media during this period and the monitoring was done by spectrophotometry.

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