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## Nuclear and radioanalytical techniques in nanotoxicology research: studies on the Rabbit Reproductive System

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Nanotechnology, perceived as one of the key technologies of this century. Despite the term “nanotechnology” is synonymous with things that are innovative and highly promising, little attention has been dedicated to the other side of the coin, i.e. the research on toxicological effects and on the relations with factors that can affect the nanotoxicity on human health and on the environment. Research on the impact of engineered nanoparticles (NPs) is strongly hampered by a lack of reliable tools to detect, visualize and quantitatively trace particles movement and transfer in complex environmental and biological systems. A few methods, such as labelling with fluorescent probes, may overcome some of the detection problems; however, leading a significant modification of the particles to be traced, the engineered NPs behavior is modified. Conversely radiolabelling or radioactivate the NPs to make them distinctive and thus easily detectable, is one very smart way to solve the problem especially because after neutron or proton activation the physicochemical characteristics in terms of size distribution and Z potential are maintained as the “cold” ones. One of the debated themes is the influence of NPs on the human reproductive system. In this contest a way to have experimental evidence is the study of AuNPs and AgNPs passage through the blood-testicular barrier in vivo. In this work some preliminary results obtained by NAA of the sperma (seminal liquid plus sperms) from selected strain of rabbits are presented. Samples were taken from animals exposed for different time (3 and 7 days) to 5 mg AgNPs and AuNPs kg<sup>-1</sup> b.w.

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