In one aspect, there is provided the use of a nanoparticle or nanoparticle aggregate to prepare a pharmaceutical composition for altering or destroying target cells in an animal when said cells are exposed to ionizing radiation, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide, wherein the density of said nanoparticle or the density of said nanoparticle aggregate is of at least 7 g/cm^3 and wherein the nanoparticle or nanoparticle aggregate is covered with a biocompatible coating allowing the nanoparticle stability between pH 6.5 and 7.5 in a physiological fluid.

In ~~another aspect~~one embodiment, there is provided a pharmaceutical composition when used for altering or destroying target cells in an animal when said cells are exposed to ionizing radiations, wherein said pharmaceutical composition comprises a nanoparticle or nanoparticle aggregate and a pharmaceutically acceptable excipient, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide, wherein the density of said nanoparticle or the density of said nanoparticle aggregate is of at least 7 g/cm^3, and wherein the nanoparticle or nanoparticle aggregate is covered with a biocompatible coating allowing the nanoparticle stability between pH 6.5 and 7.5 in a physiological fluid.

In another ~~aspect~~embodiment, there is provided a pharmaceutical composition when used for detecting or visualizing and then altering or destroying target cells in an animal when said cells are exposed to ionizing radiation, wherein said pharmaceutical composition comprises a nanoparticle or nanoparticle aggregate and a pharmaceutically acceptable excipient, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide, wherein the density of said nanoparticle or the density of said nanoparticle aggregate is of at least 7 g/cm^3 and wherein the nanoparticle or nanoparticle aggregate is covered with a biocompatible coating allowing the nanoparticle stability between pH 6.5 and 7.5 in a physiological fluid.

9. Use according to any one of claims 1 to 8, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide having an effective atomic number (Z_{eff}) of at least 50.

10. Use according to any one of claims 1 to 9, wherein the nanoparticle or nanoparticle aggregate is essentially spherical in shape.

11. Use according to any one of claims 1 to 10, wherein target cells are selected in the group consisting of benign cells, pre-malignant cells and malignant cells.

12. Use according to claim 11, wherein said malignant cells are cells from a tumor selected in the group consisting of a haematological tumor and a solid tumor.

13. Use according to any one of claims 1 to 12, wherein the pharmaceutical composition further comprises an additional therapeutic compound, distinct from a nanoparticle or nanoparticle aggregate, intended to treat cancer.

14. Use according to any one of claims 1 to 13, wherein said animal is a human.

~~15. Pharmaceutical composition when used for altering or destroying target cells in an~~ animal when said cells are exposed to ionizing radiations, wherein said pharmaceutical composition comprises a nanoparticle or nanoparticle aggregate and a pharmaceutically acceptable excipient, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide, wherein the density of said nanoparticle or the density of said nanoparticle aggregate is of at least 7 g/cm^3, and wherein the nanoparticle or nanoparticle aggregate is covered with a biocompatible coating allowing the nanoparticle stability between pH 6.5 and 7.5 in a physiological fluid.

16. Pharmaceutical composition when used for detecting or visualizing and then altering or destroying target cells in an animal when said cells are exposed to ionizing radiation, wherein said pharmaceutical composition comprises a nanoparticle or nanoparticle aggregate and a pharmaceutically acceptable excipient, wherein the nanoparticle or nanoparticle aggregate consists of a metal oxide, wherein the density of said nanoparticle or the density of said nanoparticle aggregate is of at least 7 g/cm^3, and wherein the nanoparticle or nanoparticle aggregate is covered with a biocompatible coating allowing the nanoparticle stability between pH 6.5 and 7.5 in a ~~physiological fluid.~~