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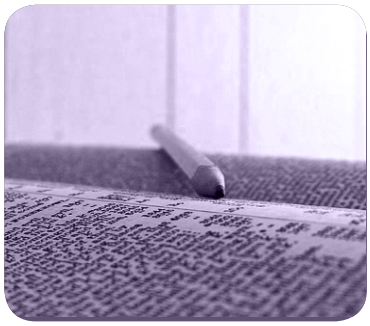

Gold-based nanostructures for uveal melanoma treatment

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UAM EDICIONES

GOLD-BASED NANOSTRUCTURES FOR UVEAL MELANOMA TREATMENT

Uveal melanoma (UM) is the most common primary intraocular malignant tumor in adults. It results in liver metastasis in 85 % of the cases, half of which end up in death. This overwhelming scene has raised up a considerable interest in the development of novel therapeutic approaches.

One of the biggest problems of the current cancer chemotherapeutics is their lack of specificity, leading to a broad range of side effects. Functionalized gold-based nanostructures are an excellent choice for biomedical applications and may offer a strategy to overcome such complications.

In this work, we have studied the mechanism of action of two chemotherapeutic agents (AZD8055 and Selumetinib) in UM cell lines using different biochemical and microscopic techniques. These two drugs interfere with the MAPK and the PI3K pathways, respectively, which are involved in promoting cellular growth, proliferation, invasion and cell survival. Furthermore, we have developed a delivery system for these chemotherapeutic agents using gold-based nanostructures stabilized by Bovine Serum Albumin (BSA-AuNCs). Finally, we have tested the effect of these nanosystems in UM cell lines.

Our results show that both chemotherapeutic agents interfere in the viability, the morphology and the cell cycle of UM cell lines. BSA-AuNCs can be functionalized with these drugs leading to the formation of nanoparticles. Furthermore, AZD8055 BSA-AuNCs have shown to reduce cellular viability and interfere in cell cycle in a similar way to the free drug. Due to the versatility of these nanomaterials, we are assessing different approaches to improve their efficacy as drug carriers.