

EVALUATION OF RADIOSENSITIZERS EFFECTS OF GOLD ULTRASMALL NANOPARTICLES IN ALTERNATIVE IN VIVO MODEL OF HPV-NEGATIVE HEAD AND NECK SQUAMOUS CELL CARCINOMA

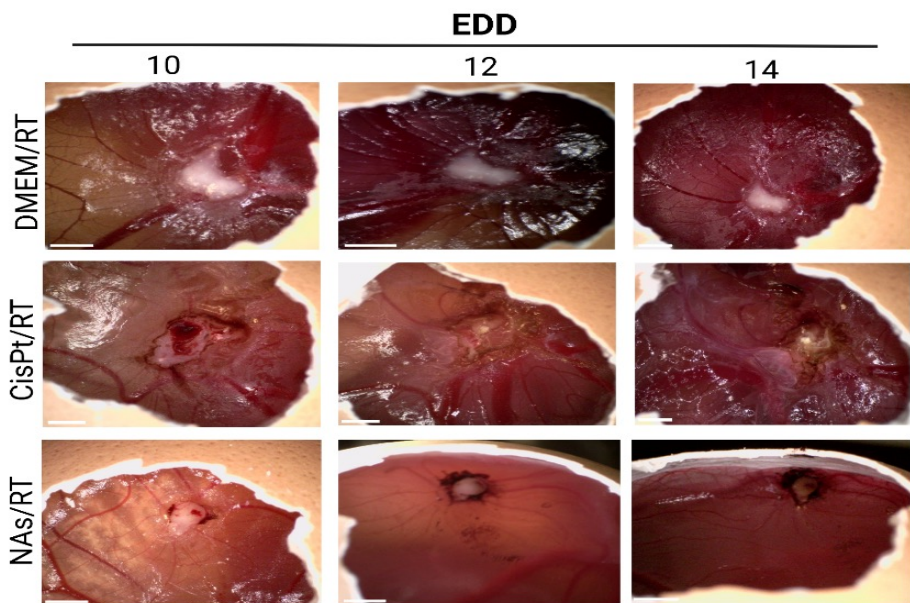
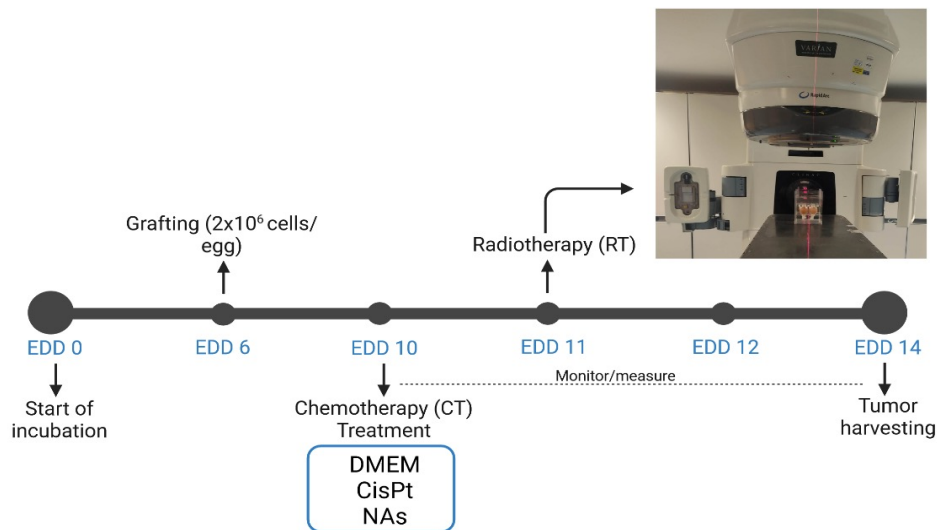
Definitive concomitant cisplatin-based chemoradiotherapy (CTRT) is the current gold standard for most patients with advanced stage head and neck squamous cell carcinoma (HNSCC).

Despite advances in clinical management, more than a third of patients with HPV-negative HNSCC do not complete CTRT treatment protocols due to cisplatin toxicity.

Since cisplatin toxicity is a major obstacle in completing definitive CTRT, the development of alternative and less toxic radiosensitizers is therefore warranted to improve treatment results.

Noble metal nanoparticles (NPs) have emerged as promising agents in oncology, serving as drug carriers and radiosensitizers. However, the use of noble metal NPs in combination treatments is still in the preclinical stage due to their persistent presence in the body.

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This study aimed to evaluate and compare the performance of drug-free non-persistent NAs with the gold standard (i.e., cisplatin) in combination with radiotherapy using a standardized chorioallantoic membrane (CAM) tumor model of HPV-negative HNSCC.

Methods:

HPV-negative HNSCC cells (2×10^6 SCC 25 cells) were inoculated on the CAM at EDD6.

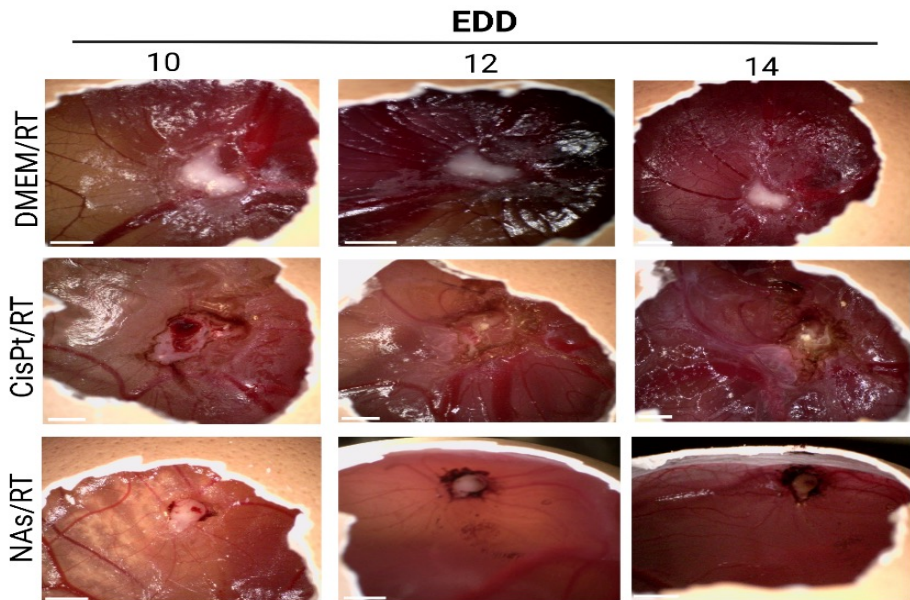
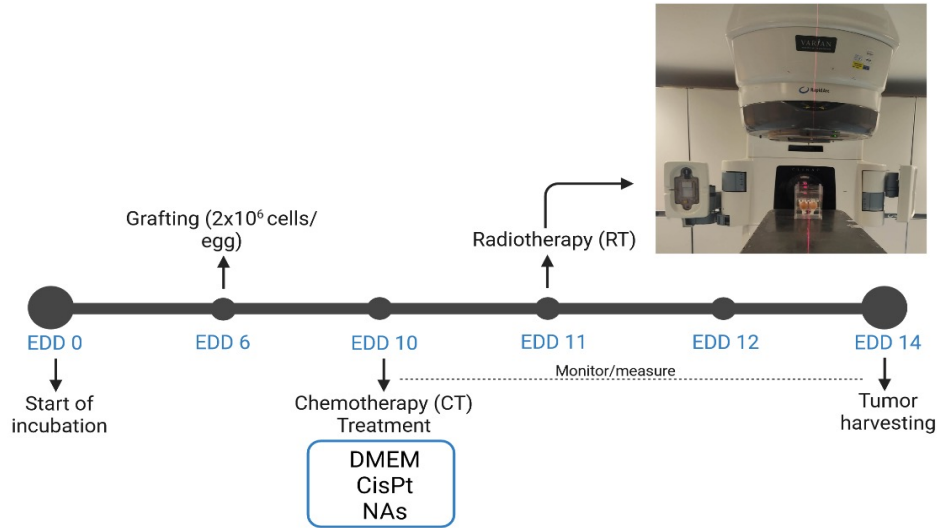
On EDD10, tumor-bearing embryos were randomized and divided into different treatment groups:

- serum-free cell culture medium/RT;
- cisplatin/RT;
- NAs/RT.

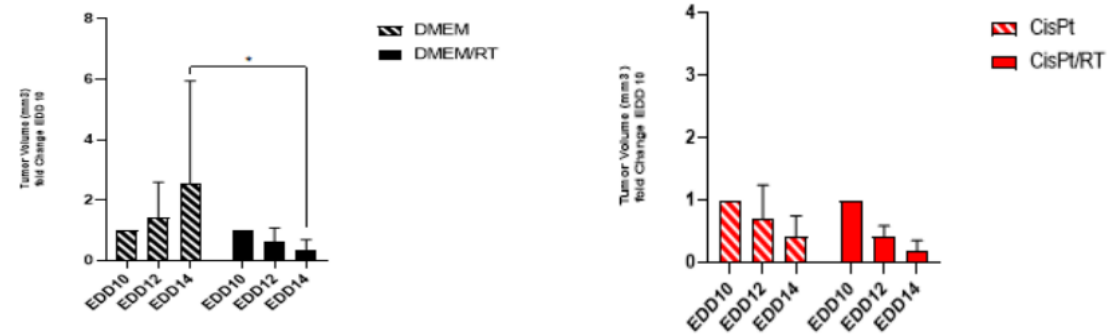
RT was administered on EDD11 using a Varian DHX linear accelerator (LINAC) delivering a total radiation dose of 1 Gy with 6 MV photons.

Following RT, the eggs were monitored and photographed daily until EDD14, when the tumors were harvested. Tumor volume was calculated using the formula $\frac{1}{2} \times (\text{length} \times \text{width}^2)$.

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