

Tin Tungstate Nanoparticles Beta-SnWO₄ small molecule (tool compound)

Catalogue number: 160389

Sub-type: Nanoparticle

Images:

Contributor

Inventor: Claus Feldmann

Institute: Karlsruhe Institute of Technology

Images:

Tool details

***FOR RESEARCH USE ONLY**

Name: Tin Tungstate Nanoparticles Beta-SnWO₄ small molecule (tool compound)

Alternate name:

Class:

Conjugate:

Description: Tin Tungstate nanoparticles act as photosensitizers for photodynamic tumor therapy of near-surface tumors via reiterated 5 min blue-light LED illumination.

Purpose:

Parental cell:

Organism:

Tissue:

Model:

Gender:

Isotype:

Reactivity:

Selectivity:

Host:

Immunogen:

Immunogen UNIPROT ID:

Sequence:

Growth properties:

Production details:

Formulation:

Recommended controls:

Bacterial resistance:

Selectable markers:

Additional notes: "The nanoparticulate inorganic photosensitizer Hf-SnWO_4 is suggested for photodynamic therapy (PDT) of near-surface tumors via reiterated 5 min blue-light LED illumination. Hf-SnWO_4 nanoparticles are obtained via water-based synthesis and comprise excellent colloidal stability under physiological conditions and high biocompatibility at low material complexity. Antitumor and antimetastatic effects were investigated with a spontaneously metastasizing (4T1 cells) orthotopic breast cancer BALB/c mouse model. Besides protamine-functionalized Hf-SnWO_4 (23 mg/kg of body weight, in PBS buffer), chemotherapeutic doxorubicin was used as positive control (2.5 mg/kg of body weight, in PBS buffer) and physiological saline (DPBS) as a negative control. After 21 days, treatment with Hf-SnWO_4 resulted in a clearly inhibited growth of the primary tumor (all tumor volumes below 3 cm^3) as compared to the doxorubicin and DPBS control groups (volumes up to 6 cm^3). Histological evaluations of lymph nodes and lungs as well as the volume of ipsilateral lymph nodes show a remarkable antimetastatic effect being similar to chemotherapeutic doxorubicin but according to blood counts at significantly reduced side effects. On the basis of low material complexity, high cytotoxicity under blue-light LED illumination at low dark and long-term toxicity, Hf-SnWO_4 can be an interesting addition to PDT and the treatment of near-surface tumors, including skin cancer, esophageal/gastric/colon tumors as well as certain types of breast cancer." From Seidl et al 2016, ACS Nano, 10, 3149-3157.

Target details

Target:

Target alternate names:

Target background:

Molecular weight:

IC₅₀:

Applications

Application: Used to treat tumours in BALB/C mice orthotopically inoculated with the 4T1 breast cancer cell line. Reduced lymph node metastases. Killed 4T1 cells in vitro.

Application notes:

Handling

Format:

Concentration:

Passage number:

Growth medium:

Temperature:

Atmosphere:

Volume:

Storage medium:

Storage buffer:

Storage conditions:

Shipping conditions: Dry Ice

Related tools

Related tools:

References

References:

CancerTools.org