The Effect of Doxorubicin Loaded Silica Nanoparticles on the Expression of PARP-1 in Head and Neck Squamous Cell Carcinoma cell Line. (In vitro study)

nihal darwish[1], heba dahmoush[2], safa fathy abd el waha[3]

[1]BDs, faculty of dentistry, cairo university, [2]professor of oral and maxillofacial pathology, faculty of dentistry cairo uiversity, [3]assistant professor of oral and maxillofacial pathology, faculty of dentistry , cairo university

Working

Sep 30, 2018

dx.doi.org/10.17504/protocols.io.t5xeq7n

Nihal Darwish

ABSTRACT

Oral cancer is one of the most significant cancers in the world; the most common of which is oral squamous cell carcinoma (OSCC) that makes up to 94% of oral malignances (Bernestein et al, 2013). Based on reports of the world Health Organization (WHO), OSCC occupied the sixth most common cancer in the world,

Despite the advances and extensive research on novel approaches, current treatments are still limited to surgery, radiotherapy and conventional chemotherapy (Rosenthal et al, 2016). To date, chemotherapy is one of the most effective treatments (Wang et al, 2015). Among the most important anti-neoplastic drugs, anthracycline antibiotic doxorubicin (DOX) is commonly used in cancer therapy

In the past few years, the research field of nanomedicine has rapidly developed great promises in fighting cancer, and held the hope of providing new selective methods which can destroy cancer cells without harming healthy tissues (Zardini et al, 2015). Silica nanoparticles are among the most promising organic nano-biomaterials which were approved by the US Food and Drug Adminstration (FDA) for cancer therapy clinical trials (Wang et al, 2018). They have many advantages including their tunable particle size (from 50-300 nm) which facilitate endocytosis by living cells, in addition to large pore volume and surface area for better control over drug loading and release (Zhou et al, 2018).

TAGS

Dr. Heba Mahmoud Dahmoush

Professor of Oral and Maxillofacial patholog

Show tags

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

1. Abbasi, M.M., Jahanban-Esfahlan, R., Monfaredan, A., Seidi, K., Hamishehkar, H. and Khiavi, M.M., 2014. Oral and IV dosages of doxorubicin-methotrexate loaded-nanoparticles inhibit progression of oral cancer by down-regulation of matrix methaloproteinase 2 expression in vivo. Asian Pac J Cancer Prev, 15(24), pp.10705-10711. 2. Cheng, B., 2016. Multifunctional nanocarriers for cancer therapy. 3. Hanušová, V., Boušová, I. and Skálová, L., 2011. Possibilities to increase the effectiveness of doxorubicin in cancer cells killing. Drug metabolism reviews, 43(4), pp.540-557. 4. Jain, A.K., Swarnakar, N.K., Das, M., Godugu, C., Singh, R.P., Rao, P.R. and Jain, S., 2011. Augmented anticancer efficacy of doxorubicin-loaded polymeric nanoparticles after oral administration in a breast cancer induced animal model. Molecular pharmaceutics, 8(4), pp.1140-1151. 5. Kah, J.C.Y., Kho, K.W., Lee, C.G.L. and Richard, C.J., 2007. Early diagnosis of oral cancer based on the surface plasmon resonance of gold nanoparticles. International journal of nanomedicine, 2(4), p.785.

DOCX

my protocol 1.docx

PROTOCOL STATUS

Working

We use this protocol in our group and it is working

This is an open access protocol distributed under the terms of the **Creative Commons Attribution License** (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited