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NANOCAPSULES CONTAINING IMIQUIMOD ACTION IN CERVICAL CANCER CELL LINE (SIHA)

Rafaela Pletsch Gazzi[1]
Luiza Abrahão Frank[2]
Paola de Andrade Mello[2]
Andreia Buffon[2]
Adriana Raffin Pohlmann[2]
Guterres S. S.[2]

Introduction: Cervical cancer is related to human papillomavirus infection (HPV), the drug used in treatment is imiquimod, which causes adverse effects. Nanoencapsulation strategy aims to decrease adverse effects related to the drug. This work aims to evaluate cytotoxic action of the new formulation during a determinate time interval and acute and chronic effects on cervical cancer cell line. Methods: Two polymeric nanocapsules suspensions were developed by the method of nanoprecipitation and named as: NCimiq and NC (nanocapsules without imiquimod). The free drug dissolved in dimethyl sulfoxide (IMIQfree) was also evaluated for comparison with the developed nanosystem. The formulations were tested in cell culture (SiHa), plated $4x10^3$ cells per well for 24 hours to achieve semi-confluence. The results were assessed by flow cytometry technique (BD Biosciences, San Jose, CA, USA) after treatment in 24, 48 and 72 hours. Besides that, the cell nucleus was also evaluated after treatment with the formulations to confirm cell death mechanism involved, using Hoechst dye. Results and discussion: After 24 hours it is noted that NCimiq decreased 60% of cell viability when compared to control and decreased cell viability five times more than IMIQfree. NC also decreased cell viability (about 37%), probably due to copaíba oil component, which has anti-inflammatory action. After 48 hours, it is noted that NCimiq decreased 87% of cell viability when compared to control, whereas IMIQfree only 22%. Finally, after 72 hours of treatment with NCimiq there were no more viable cells in the well, whereas IMIQfree decreased only 44% of cell viability. Therefore, it can be observed acute (after 24 hours) and chronic effects (after 72 hours) of the nanoencapsulated drug on cervical cancer cells and it is concluded that nanoencapsulated drug can decrease more cell viability than free drug. The analysis

[1] Faculty of Pharmacy, University of Rio Grande do Sul, Porto Alegre, RS, Brazil.
[2] Pharmacy Graduate Program, University of Rio Grande do Sul, Porto Alegre, RS, Brazil.

with Hoechst dye demonstrated that the cells die by apoptosis. Conclusions: The proposed formulation has potential to be used in treatment of cervical cancer since it was more effective than the free drug.

Palavras-chave: Cervical câncer. Nanotechnology. Imiquimod.