Polymeric nanoparticles for controlled release of synergic system posaconazole/temozolomide

GOMES AJ[1], SUBRINHO FL[1,2], COSTA CL[1,3], [2]LUNARDI CN[1]

[1]Laboratory of Photochemistry and Nanobiotechnology, University of Brasília, Brasília, Brazil
[2]Postgraduate Program in Science Technology and Health, University of Brasília, Brasília, Brazil
[3]Postgraduate Program in Nanoscience and Nanobiotechnology, University of Brasília, Brasília, Brazil

Keywords: Polymeric, nanoparticles, microparticles, spectroscopy, posaconazole, temozolomide

I. Abstract

Background: Polymeric nanoparticles can be considered systems with increased therapeutic performance, since they are able to low the toxicity and side-effects, increase bioavailability and efficacy of different drug classes [1]. ***Objective***: The aim is developing polymeric nanoparticles containing the drugs temozolomide (TMZ) and posaconazole (PSZ) (TMZ-PSZ NPs) as promise to application in cancer therapy, and evaluated its physical, chemical and spectroscopic properties. ***Methods***: TMZ-PSZ NPs were prepared by the solvent evaporation technique. Parameters such as particle size, drug encapsulation efficiency, external morphology, and *in vitro* release behavior were evaluated. The spectroscopic properties (absorption, fluorescence, FTIR, …), were evaluated in organic solution and when encapsulated in nanoparticles. ***Results***: Scanning electron microscopy and dynamic light scattering revealed that TMZ-PSZ NPs are spherical in shape, and they have a diameter of 245.5 ± 23.0 nm and a low tendency to aggregate with zeta potential of -18.73 ± 3.43 mV. The entrapping efficiency obtained in this procedure was 79%. Spectroscopic analysis showed that the drugs did not undergo structural alteration when loaded with nanoparticles. ***Conclusions***: The TMZ-PSZ NPs have suitable physical, chemical and morphological characteristics, dealing for future tests delivery system as an alternative cancer therapy due to its excellent biodegradability, biocompatibility, and maintenance of its spectroscopic properties when compared with drugs in homogenous media. The biocompatible DDS medium is a new proposal and will make feasible the use of TMZ-PSZ NPs for cancer therapy, improving the utilization of non-organic media to deliver this kind of molecule. **Supported by** FAPDF, CNPq, CAPES, FINATEC.

II. Image:

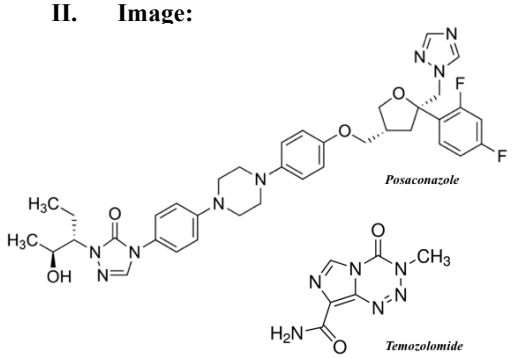


Figure 1 – Chemical structure of temozolomide and posaconazole

III. Reference:

1 - Lunardi, CN et al., 2017. Mater. Sci. Eng. C., 70; 505–511

IV. Biography:

Anderson de Jesus Gomes has completed his Bachelor in Chemistry from Universidade Federal of Uberlandia (1995), Master's at Chemistry from Universidade de São Paulo (1998), PhD at Chemistry from Universidade de São Paulo (2003) and Postdoctoral Studies from Universidade de São Paulo (2007) and Columbia University (2014). He is the Associate Professor of Chemistry in Universidade de Brasilia since 2008. Has experience in Chemistry, focusing on Photochemistry and Nanotechnology. He has published more than 25 papers in reputed journals.

V. Presenting author details



Full Name: Anderson de Jesus Gomes
Contact number: +55 61 995019599
Session name/ number:
Category: Poster presentation
Passport Number: FM558021