

FCF023-2018

## HPLC-RP TO DETERMINE THE ENCAPSULATION EFFICIENCY OF AN ANTI-CANCER DRUG IN NANOPARTICLES

FERNANDO KANEKO PRADO (M)\*, ELIANA MARTINS LIMA\*\*, MARIA SEGUNDA AURORA PRADO\*

*\*Department of Pharmacy FCF/USP \*\*Pharmaceutical Technology Laboratory, Faculty of Pharmacy/UFG*

**Introduction and Objectives:** According to the World Health Organization (WHO), in 2012, approximately 14 million new cases and 8.2 million deaths from various types of cancer were reported. Imatinib widely used in leukemias and gastrointestinal neoplasms. The present work aims to develop and validate a method to determine the encapsulation efficiency of the imatinib drug in previously elaborated and characterized nanoparticles by HPLC.

**Material and Methods:** 200  $\mu\text{L}$  of nanosuspension were filtered on a 0.45  $\mu\text{m}$  Millex filter, to 100  $\mu\text{L}$  of the filtrate, 1000  $\mu\text{L}$  of ethanol PA was added to break the nanoparticles, then 900  $\mu\text{L}$  of water were added and centrifuged for 5 min. The supernatant was quantified by HPLC. To calculate Encapsulation Efficiency was used Equation. A ZORBAX C18 (100x4.6 mm x 3.5  $\mu\text{m}$ ) column was used. The flow rate was 1  $\text{mL}\cdot\text{min}^{-1}$  and absorbance was monitored at 267 nm. The mobile phase was 60% ammonium acetate buffer and 40% acetonitrile.

**Results and Conclusions:** Validation of the proposed method followed ICH. The proposed method showed good linearity,  $R^2=0.9998$ , over a concentration range of 3.0 - 60.0  $\mu\text{g}\cdot\text{mL}^{-1}$  of imatinib. Detection and quantification limits were 0.80  $\mu\text{g}\cdot\text{mL}^{-1}$  and 2.92  $\mu\text{g}\cdot\text{mL}^{-1}$ , respectively. Intra-day precision was less than 2%. The precision was expressed as percentage of relative standard deviation (RSD). The accuracy expressed as recovery was  $98.85 \pm 0.04\%$ . The encapsulation efficiency of imatinib in nanoparticles was 90%. The proposed HPLC method showed to be simple, linear and precise and also suitable for determination of imatinib in nanoparticles and in pharmaceuticals.

**Financing:** CAPES

FCF024-2018

## DEVELOPMENT AND CHARACTERIZATION OF SOLID DISPERSIONS OF NICLOSAMIDE

MARIANA RIBEIRO GUBITOSO (IC)\*, NÁDIA ARACI BOU-CHACRA\*, FLAVIO MACHADO DE SOUZA CARVALHO\*\*, GABRIEL LIMA BARROS DE ARAUJO\*

*\*Departamento de Farmácia, Faculdade de Ciências Farmacêuticas, Universidade de São Paulo \*\*Departamento de Mineralogia e Geotectônica, Instituto de Geociências, Universidade de São Paulo*

**Introduction and Objectives:** Niclosamide (NCL) is an effective anthelmintic agent that in recent years has been repositioned for use in the treatment of tumors and viral infections. Its low solubility in water, however, may compromise its effective use and performance in preclinical and clinical trials. The present project explores possible alternatives through the research and development of stable amorphous solid dispersions aiming the reformulation of this drug, to indicate ways to improve its solubility.

**Material and Methods:** An exploratory screening NCL-polymer dispersions was performed by rotary evaporation, Differential Exploratory Calorimetry (DSC) and X-ray powder diffraction.

**Results and Conclusions:** Melting enthalpy and crystallinity index for each dispersion were successfully used to determinate the miscibility and stabilization behavior of Povacoat, hydroxypropylmethylcellulose derivatives (HPMC, HPMC-AS, HPMC-P), hydroxypropylcellulose, soluplus and poloxamers, indicating ways to develop niclosamide formulations with enhanced dissolution and stability performance.

**Financing:** n.a