ISSN 0102-6593

caderno de farmácia

Órgão Oficial da Faculdade de Farmácia da Universidade Federal do Rio Grande do Sul
volume 26, Suplemento, 2010

DEVELOPMENT OF HPLC METHOD FOR DETERMINATION OF A SYNTHETIC CHALCONE DERIVATIVE IN NANOEMULSION

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***Mestranda – Início: 2009/1**

Introduction: Chalcones are structurally simple compounds of the flavonoid family and are present in a variety of plant species.[1] Recent studies have shown that a series of synthetic chalcones derivatives present *in vitro* and *in vivo* antileishmanial property.[1] Andrighetti-Fröhner and co-workers showed that 5-(2-Benzoylethenyl)-N-benzyl-2-methoxybenzenesulfonamide is a potential agent against *Leishmania braziliensis*.[2] New drug delivery systems have been investigated in order to reduce toxicity and increase the activity of leishmanicidal compounds, in this context, topical nanoemulsions have great potential as carriers to release substances of low solubility as the chalcones, leading to an increase in its penetration through the skin, enhancing the topic effect.[3] Studies considering this context are under development in our research group, and a analytical method is necessary to evaluate the drug content.
Objective: Development of an HPLC analytical method in order to determine the synthetic chalcone derivative in nanoemulsions.
Materials and Methods: The HPLC apparatus consisted of a Shimadzu Prominence equipped with an SPD 20AV UV-Vis detector, Phenomenex Luna C18 column (150 x 4.6 mm, 5 µm) and guard column (C18). The mobile phase consisted of a methanol-trifluoroacetic acid pH 5.0 (70:30, v/v) isocratic flow 1.0 mL/min, wavelength 330 nm. The linearity was assessed by a calibration curve in the range of 0.5 to 4.0 µg/mL (n=3). The specificity was evaluated by analyzing solutions containing samples of blank nanoemulsion. The accuracy was assessed by repeatability (intra-day) and intermediate precision (inter-day). The intra-day precision was performed on the same sample (n = 6) in the same concentration (2.5 µg/mL) during the same day. Inter-day precision was evaluated by comparison of experiments on different days (three days). The accuracy was determined by recovery of known amounts of synthetic chalcone derivative added to samples of blank nanoemulsion.
Results and Discussion: The linearity was evaluated by linear regression analysis, and resulted in the coefficient of determination (r^2) equal to 0.999 and the linear equation y = 79693.8 x + 263.2. The method was specific, since there were not detected interfering constituents in the nanoemulsion at 330 nm. The values of RSD of precision tests (<0.17%) and accuracy (>99.71, <100.99) are within the range recommended by ICH for these parameters.[4]
Conclusions: The method was specific, linear, precise and accurate for the quantitation of synthetic derivative of chalcone in topical nanoemulsion. The perspectives of this study are the development of a drug delivery system for cutaneous administration of 5-(2-Benzoylethenyl)-N-benzyl-2-methoxybenzenesulfonamide and possible treatment of American Cutaneous Leishmaniasis.

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Acknowldgements: Financial support from CAPES/Brazil.