Validation of a UV Spectrophotometric Method for Determining trans-dehydrocrotonin in Inclusion Complexes with Hydroxypropyl-β-Cyclodextrin

Taciana L.S. LAPENDA 1, Waldenice A. MORAIS 1, Mariane C. B. LIRA 1, Maria A.M. MACIEL 2 & Nereide S. SANTOS-MAGALHÃES 1*.

1 Universidade Federal de Pernambuco (UFPE), Laboratório de Imunopatologia Keizo-Asami (LIKA), Av. Prof. Moraes Rego, 1235 Cidade Universitária, Recife, PE, Brazil.
2 Universidade Federal do Rio Grande do Norte (UFRN), Departamento de Química, Natal, RN, Brazil.

SUMMARY. Trans-dehydrocrotonin (t-DCTN) is a 19-nor-clerodan diterpen with several important pharmacological properties, including hypoglycemic and antitumor activity. However the low water solubility and hepatotoxicity of t-DCTN limit its use in therapeutic applications. Drug inclusion complexes with cyclodextrins (CDs) can modify physicochemical properties of parent drugs, such as improving their aqueous solubility and reducing their toxicity. A UV method was therefore validated for determining t-DCTN in HP-β-CD inclusion complexes with a view to future applications in research and therapy. The regression equation of the analytical curve (1–20 μg/mL) was [t-DCTN] = absorbance + 0.00147/0.04214. The precision of the method was satisfactory, producing values of relative standard deviation less than 2 % for all samples analyzed. The accuracy was between 99.6 and 100.02 %. The content of t-DCTN in t-DCTN:HP-β-CD was 99.8 %. The UV validated method developed is straightforward and suitable for use in the routine analysis of t-DCTN complexed with hydroxypropyl-β-cyclodextrin.

KEY WORDS: Hydroxypropyl-β-cyclodextrin, Inclusion complex, Trans-dehydrocrotonin, UV spectrophotometry, Validation.

* Author to whom correspondence should be addressed. E-mail: nssm@ufpe.br, nereide.magalhaes@gmail.com