CHARACTERIZATION OF THE DIBENZOFURAN DERIVATIVE USNIC ACID

[1,2]Lira, M.C.B.; da Silva, D.G.V.C[3] ,Sinisterra, R.D.; [1,2]Santos-Magalhães, N.S.

[1]Laboratório de Imunopatologia Keizo-Asami; [2]Depto. de Ciências Farmacêuticas, Universidade Federal de Pernambuco, Pernambuco, Brasil; [3]Depto. de Química – Universidade Federal de Minas Gerais, Minas Gerais, Brasil

Usnic acid (UA) is one of the most extensively studied lichen derivative and it exhibits a number of pharmacological activities. However, its therapeutic use is limited by the unfavorable physico-chemical properties, such as water insolubility. Thermal analysis (DSC and TG), infrared, X-ray powder diffraction, H^1NMR spectroscopy and solubilization at different pHs were performed to characterize usnic acid. An evaluation of the solubility of UA at different pH was also carried out. DSC curve showed an endothermic peak around 200^{o}C and an exothermic peak around 275^{o}C, representing UA fusion and degradation peak, respectively. TG curve presented a thermal stability until approximately 200ºC followed by a weight loss (approximately 55%), attributed to the release of water molecules; and a second loss corresponding to UA decomposition with total weight loss, indicating material pureness. Infrared spectra showed characteristic bands of UA as: cyclic and aromatic ketone and methyl ketone, aryl-alkyl ether and phenyl groups in accordance with the literature. X-ray spectra exhibited sharp peaks, characteristic of crystalline compounds. H^1NMR results are in accordance with previous reported ones. UA is practically insoluble until pH 4.4 and the solubility increases reaching a maximum solubility at pH 12.4. UA was therefore full characterized and the results could support further studies.

Supported by FACEPE
Keywords: Usnic acid, physico-chemical properties