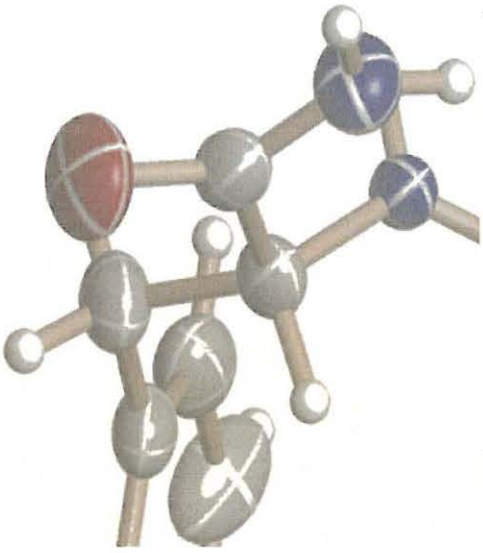

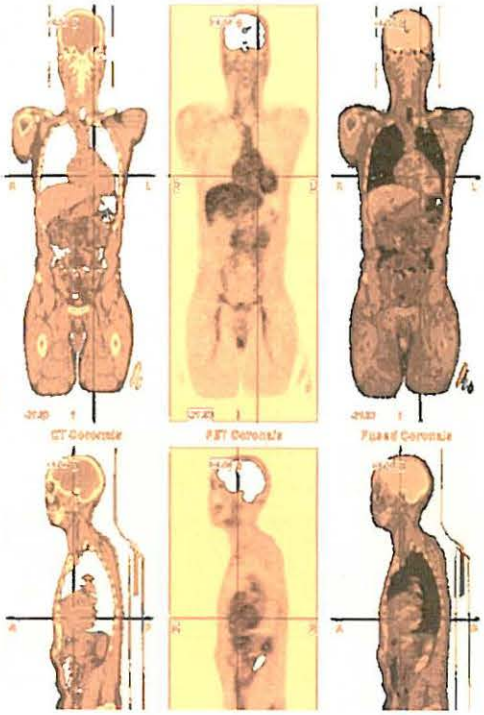

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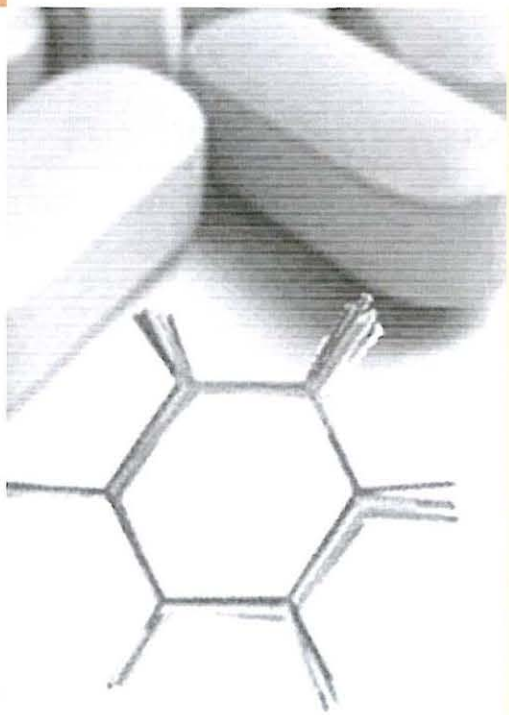

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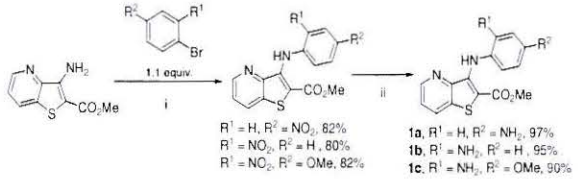
Radical scavenging activity, lipid peroxidation inhibition and redox profile of aminodiarylamines in the thieno[3,2-*b*]pyridine series

Ricardo C. Calhelha[a,b],Miguel Vilas-Boas[b],Maria-João R. P. Queiroz[a,*], Isabel C.F.R. Ferreira[b]

[a]*Centro de Química, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal*
[b]*Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança Campus de Santa Apolónia, apartado 1172, 5301-855 Bragança, Portugal;*
**mjrpq@quimica.uminho.pt*

The reducing properties of diarylamines make them very important as antioxidants, especially as radical scavengers as it has been demonstrated by our and other research groups [1-3]. Three di(hetero)arylamines were prepared by C–N coupling of the methyl3-amino-6-bromothieno[3,2-*b*]pyridine-2-carboxylate with bromonitrobenzenes and further reduced to the amino compounds **1a-c** (Scheme) [4].



i) $Pd(OAc)_2$ (15 mol%), xantphos (18 mol%), Cs_2CO_3 (2 equiv.), dry dioxane, 2h, 120 °C.
ii) NH_4Cl (1 equiv.), Fe (8 equiv.), EtOH/THF/H_2O (3:1:0.5), 100 °C, 2h.

The antioxidant properties of these compounds were evaluated through chemical, biochemical and electrochemical assays. The chemical assays allowed an evaluation of their reducing power (RP) and radical scavenging activity (RSA), while biochemical assays evaluated the lipid peroxidation inhibition capacity by the β-carotene-linoleate system (CLS) and inhibition of formation of thiobarbituric reactive substances in brain cells homogenates (TBARS); the electrochemical characterization of the compounds was performed by cyclic voltammetry and differential pulse voltammetry. Furthermore, an initial assessment of possible compounds hepatotoxicity was performed by studying their *in vitro* cell growth inhibition activity in a liver primary cell culture. Diarylamine **1a** was the most efficient in RSA (63 μM) and RP (33 μM), while compound **1c** gave the best results in CLS (41 μM) and TBARS (7 μM), with EC_{50} values even lower than those obtained for the standard trolox. Despite the similar electrochemical responses of all compounds, diarylamine **1a** presented the lowest oxidation potential, lower than the one of trolox, and the highest "antioxidant power" in the electrochemical assays. All compounds presented low hepatotoxicity when compared with the standard ellipticine (GI_{50} value 4 μM), mostly compound **1a** (GI_{50} value > 125 μM).

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