Reactivity of the one-electron reduction product from nimodipine, nitrendipine and nicardipine with relevant biological thiols

Nunez-Vergara, Luis J.

Guinez-Castro, Luis J.

Bollo, Luis J.

Squella, Luis J.

The reactivity of the electrochemically generated nitro radical anion from nicardipine, nitrendipine and nimodipine, all nitro aryl 1,4-dihydropyridine derivative, with relevant thiols, was quantitatively assessed by cyclic voltammetry. The method was based in the decrease in the return-to-forward peak current ratio after the addition of the compounds. A quantitative procedure to calculate the respective interaction constants between the radicals and the thiols was employed. In the optimal selected conditions, i.e. mixed media (0.015 M aqueous citrate/DMF: 35/65, 0.3 M KCI, 0.1 TBAI) at pH 9.0 the following tentative order of reactivity of thiols could be established: glutathion > penicillamine > N-acetylcysteine > captopril. Apparently, the nitro radical anion from nicardipine was more reactive towards the thiol compounds than the other radicals. In all the cases, the interaction rate constants for these derivatives were greater than the natural decay constant of the radical.

Results