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Selectively electrochemical modification of proteins on platinum and boron-doped diamond (BDD) electrodes: nitration of lysozyme and myoglobin.

J. Iniesta[(a)], M.D. Esclapez-Vicente[(a)], V. Sáez[(a)], S. Mercer[(b)], J. Heptinstal[(b)], D.J. Walton[(b)] and H.J. Cooper[(c)].

[a] Dep. of Physical Chemistry and Institute of Electrochemistry, University of Alicante, , Spain.
[b] Centre for Molecular and Biomedical Science, School of Science and the Environment, Coventry University, UK.
School of Bioscience, University of Birmingham, Birmingham B15 2TT, UK

The electrochemical selective modification of residues in proteins and other bioactive molecules offers the production of unique, novel proteins[(1)] which could lead to a better understanding of processes and protein behaviour involved in oxidative stress. Hen egg white lysozyme and myoglobin proteins, which are used as protein model, have been electrosynthetically nitrated at both platinum and BBD in the presence of sodium nitrite as nitrogen source. Site-specific nitration at tyrosine amino acids has been probed by mass spectrometry. The study of reaction conditions has been discussed toward pH, applied potential, nitrite concentration and electrode pre-treatment. Distinct nitrated products obtained at different electrode surfaces have been compared regarding their protein activity.

D. Matters, H.J. Cooper, L. McDonnell, J. Iniesta, J. Heptinstall, P. Derrick, D. Walton, I. Peterson Analytical Biochemistry (356) **2006**, 171-181