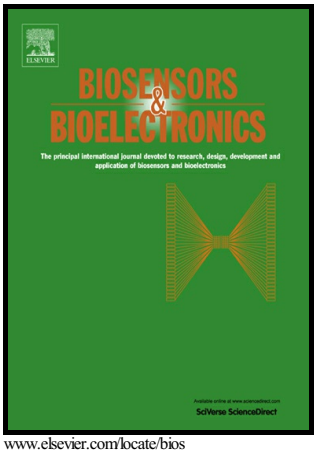

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A. Abellán-Llobregat, C. González-Gaitán, L. Vidal, A. Canals, E. Morallón

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A. Abellán-Llobregat[1], C. González-Gaitán[1], L. Vidal[2], A. Canals[2], E. Morallón[1*]

[1]Instituto Universitario de Materiales. Universidad de Alicante. Apartado 99. 03080 Alicante. Spain.

[2]Departamento de Química Analítica, Nutrición y Bromatología e Instituto Universitario de Materiales. Universidad de Alicante. Apartado 99. 03080 Alicante. Spain.

[*]**Corresponding autor.** Emilia Morallón morallon@ua.es

ABSTRACT

A new portable electrochemical sensor based on 4-aminobenzoic acid-modified herringbone carbon nanotubes (hCNTs-4ABA/Au-IDA) has been developed for the simultaneous determination of ascorbic acid (AA) and uric acid (UA) in physiological fluids. AA and UA were quantified by chronoamperometry at 0.1 and 0.32 V, respectively, in phosphate buffer solution (PBS 0.25 M, pH 7.0). Significant results were obtained for the separate quantification of AA and UA, with a limit of detection (LOD) of 0.65 μM for both analytes, and sensitivities of (9.0 ± 0.4) A g^{-1} mM^{-1} and (8.8 ± 0.3) A g^{-1} mM^{-1} for AA and UA, respectively. Repeatability was studied at 50 μM for AA and UA, providing relative standard deviations (RSD) lower than 9%. Additions of glucose, dopamine and epinephrine did not interfere with the AA and UA determination. Furthermore, UA did not interfere with AA determination at 0.1 V, although AA additions increased the current recorded at 0.32 V. The method has been successfully applied to human urine, perspiration and serum samples, without significant matrix effects, which allows for the use of an external calibration and analysis of all the matrices investigated.