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Authors: Kamonwad Ngamchuea, Christopher Batchelor-McAuley, Richard G. Compton



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# Understanding Electroanalytical Measurements in Authentic Human Saliva Leading to the Detection of Salivary Uric Acid

Kamonwad Ngamchuea, Christopher Batchelor-McAuley, Richard G. Compton\*

\***corresponding Author:** Richard G. Compton, Department of Chemistry, Physical & Theoretical Chemistry Laboratory, University of Oxford, South Parks Road, Oxford, OX1 3QZ, United Kingdom

Email: [richard.compton@chem.ox.ac.uk](mailto:richard.compton@chem.ox.ac.uk). Tel: +44(0)1865275 957 Fax: +44(0)1865275410

## Highlights

- General features of electroanalysis in human saliva are investigated.
- Microelectrodes are shown to be suitable for measurements in saliva.
- Ferrocenemethanol and ferrocyanide oxidations were studied in undiluted saliva.
- Dissolved oxygen was detected in undiluted saliva.
- A method for the detection of salivary uric acid was developed.

## Abstract

The electroanalytical responses of several redox-active species are investigated in authentic human whole saliva. First, we show that ferrocenemethanol (FcCH<sub>2</sub>OH) and ferrocyanide ([Fe(CN)<sub>6</sub>]<sup>4-</sup>) display well-defined voltammetry in undiluted saliva at a carbon microdisc electrode without the addition of supporting electrolyte. Second, we demonstrate that dissolved oxygen is detectable in saliva. The ferrocenemethanol oxidation is shown not to be altered by the medium apart from the steady-state currents which change according to the viscosity of the solvent. In contrast, the voltammetry of ferrocyanide oxidation and oxygen reduction in authentic saliva are significantly different from those in synthetic saliva or aqueous electrolyte. It is demonstrated that the electrode is partially blocked by organic molecules or other electrochemically inert species when placed in authentic saliva samples. The distortion in voltammetry thus reflects the different surface sensitivity of the two

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