



150 ANOS PARA 118 ELEMENTOS A TABELA PERIÓDICA

XXVI ENCONTRO NACIONAL

DA SOCIEDADE PORTUGUESA DE QUÍMICA

24, 25 E 26 DE JULHO DE 2019

FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO



ANO INTERNACIONAL
DA TABELA PERIÓDICA



U. PORTO
FC FACULDADE DE CIÊNCIAS
UNIVERSIDADE DO PORTO

Determination of nitrate and nitrite in human saliva with a specially designed microfluidic paper-based analytical device (μ PAD)

Francisca T. S. M. Ferreira, Raquel B. R. Mesquita, António O. S. S. Rangel

Universidade Católica Portuguesa, CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa, 4169-005 Porto, Portugal

Email: rmesquita@porto.ucp.pt

The concentration of nitrite and nitrate anions in human saliva has been primarily believed to be correlated with oral cancer and other disfunctions and infections in the mouth. However, newly found benefits to the presence of these ions in the oral cavity have been reported in a few recent studies. In any case, there is a connection between the NOx salivary concentration and the human health and therefore it has become more and more relevant to understand this connection. In this context, the objective of this work was to develop microfluidic paper-based analytical devices (μ PADs) for nitrite and nitrate determination (**Figure 1**) in human saliva samples.

The choice of this type of approach is justified by the advantages provided by these devices, which make them ideally suited to conduct on-hand analyte determinations. While many of the current monitoring techniques require specialized skills, laborious laboratory processes, or/and expensive equipment, μ PADs provide a very quick and cheap analytical measurement. Also, the minimal use of reagent and sample, coupled to its portability, makes the developed devices ideally suited for unskilled operators and regular monitoring. In this work, the determination of the nitrite and nitrate anions was based upon the modified colorimetric Griess reaction, in which the conversion of nitrate to nitrite was achieved using zinc powder.

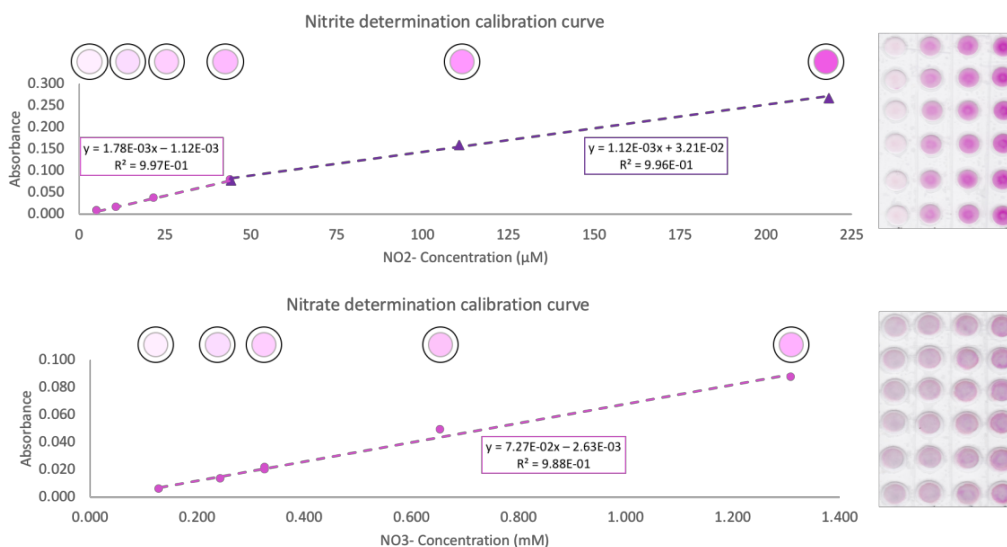


Figure 1: Calibration curves for nitrite and nitrate determination obtained with the displayed μ PADs devices.

Acknowledgements: This work was supported by National Funds from FCT - Fundação para a Ciência e a Tecnologia through project UID/Multi/50016/2019.