# Electrochemical Paper Analytical Device for nitrite and nitrate determination

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Abstract (Calibri 12)

The new voltammetric method for the determination of nitrites [1], which has been shown to be successful in the detection of meat products, is based on the formation of the electroactive product 2-methylfuran cation. Through the reduction of nitrates to nitrites with metallic zinc, and derivatization with ranitidine in the formation of the electroactive product, it has been possible to determine nitrate ions indirectly. A cathodic reduction at −0.210 V of 2-methyl-2H-furan-3-one at the electrode covered with a thin layer of ERGO and adsorbed SDBS surfactant has given a good sensitivity and the possibility of minimal interference from the sample matrix components. The incorporation of zinc metal particles in cellulose (zinculose)[2] for reduction of nitrate ions and the reaction of product formation has successfully resulted in the indirect detection of nitrate and nitrite in model samples.

Keywords: Electrochemical sensor, Voltammetry, ePAD's, Nitrite, Nitrate.

**References**

[1] Liridon Berisha, Arsim Maloku, Majlinda Haliti, Granit Jashari, Ardian Ukmata, Milan Sýs, Voltammetric determination of nitrites in meat products after reaction with ranitidine producing 2-methylfuran cation, Microchemical Journal, 159 (2020) 105403

[2] Amer Charbaji, Winfield Smith, Constantine Anagnostopoulos, Mohammad Faghri, Zinculose: A new fibrous material with embedded zinc particles, Engineering Science and Technology, an International Journal, 24 (2), (2021), 571-578.

**Figures**

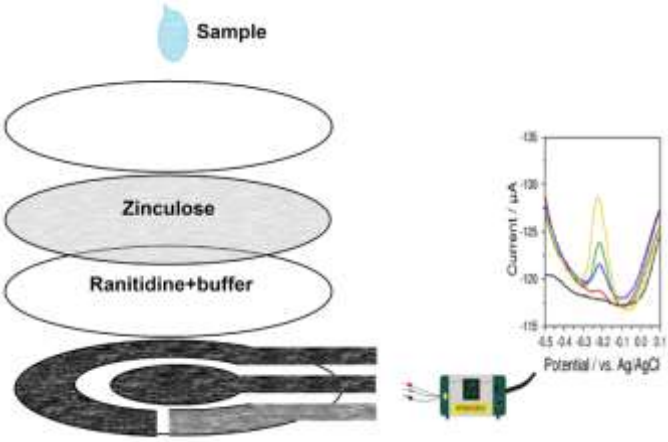


**Figure 1:** Electrochemical paper analytical device for nitrate determination.