

Electrochemical Determination of Uric Acid by Halloysite Nanotube Modified Electrode

Esma Yildiz

Arzum Erdem Gürsan*

Faculty of Pharmacy, Analytical Chemistry Department, Ege University, Izmir, Bornova 35100, Türkiye

[*arzum.erdem@ege.edu.tr](mailto:arzum.erdem@ege.edu.tr)

Halloysite nanotubes (HNTs), known as a naturally occurring hollow tubular aluminosilicate, have high surface area and cytocompatibility, making them a highly valuable materials [1]. Due to their environmental friendliness, wide availability in large quantities, and relatively low cost, halloysite nanotubes are increasingly being applied in the medical, food, and environmental sectors including development of biosensors [2,3,4]. Uric acid (UA) in abnormal concentrations in the body can result in various diseases such as hyperuricemia, gout, or Lesch-Nyhan syndrome, as well as heart-related diseases. Conversely, abnormally low levels of uric acid may contribute to the development of multiple sclerosis. Therefore, detecting uric acid concentration is crucial for diagnostic purposes [5]. The known concentration range of uric acid in serum is 0.13–0.46 mM [5]. In this study, HNT-modified pencil graphite electrode (HNT-PGE) was firstly developed, and the HNT modified electrode's surface was characterized based on SEM and electrochemical techniques. The voltammetric determination of uric acid was then performed and the limit of detection (LOD) was calculated. The effect of potential interferents upon to electrode response was also tested.

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References

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