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Novel ginger-like morphology of barium molybdate: A promising electrocatalyst for the detection of neurotransmitter dopamine (Article) [\(Open Access\)](#)

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Abstract

In this work, we have report a novel electrochemical sensor for the selective detection of dopamine (DA) based on ginger-like morphology of barium molybdate (BaMoO₄; BaM) modified screen printed carbon electrode (SPCE). The ginger-like BaM was prepared through a simple co-precipitation technique and its physiochemical properties were systematically investigated by various analytical and spectroscopic techniques such as X-ray diffraction (XRD), Raman, field emission-scanning electron microscopy (FE-SEM) and energy-dispersive X-ray spectroscopy (EDX). Furthermore, the as-prepared ginger-like BaM was effectively investigated for the sensitive and selective electrochemical determination of DA. The ginger-like BaM/SPCE shows a reversible electrochemical behavior with superior current response for DA detection. The BaM catalyst played a significant role to electrochemical detection of DA, as a results very low detection limit (0.021 μM), wide linear response range (0.1-266 μM), well sensitivity (0.35 μAμM⁻¹cm⁻²) and good selectivity in the presence of common metal ions and biological compounds. This study provides a novel idea for the fabrication of binary metal oxides and their potential application in electrochemical sensor and biosensor. © 2018 The Authors.

Author keywords

[Barium molybdate](#) [Binary metal oxide](#) [Dopamine](#) [Electrochemical sensor](#) [Ginger-like](#) [Neurotransmitter](#)

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