

An Electrochemical Dopamine Sensor based on Copper Aerogels Modified Glassy Carbon Electrode

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Dopamine is a neurotransmitter and is responsible for the proper functioning of cardiovascular, central nervous, endocrine and renal systems. Dopamine is also believed to control the physiological conditions like attention, learning, memory, movement, mood, behavior and mental comprehension in most animals and human beings. Hence it becomes very important to detect dopamine in very low quantities. We synthesized Copper aerogels using a sol-gel technique employing sodium borohydride as the reductant. The as synthesized aerogels were characterized using SEM, TEM, BET, XRD techniques for deducing the physical and morphological properties and by CV, CA and EIS for deducing the electrochemical properties for Dopamine detection. Compared to the bare GCE, the copper aerogel modified electrode showed high electrocatalytic activity in giving an oxidation peak current that is proportional to the concentration of Dopamine(S/N=3). The modified electrodes can be employed for detection of Dopamine in real samples for practical applications.