**An electrochemiluminescence biosensor for dopamine detection using poly(luminol-benzidine sulfate) electrode modified by tyramine oxidase**

An electrochemiluminescence (ECL) sensor based on a poly(luminol–benzidine sulfate) electrode has been fabricated for dopamine detection. Different concentrations of luminol and benzidine sulfate with a constant ratio of 2:3 are used as precursors to synthesize poly(luminol–benzidine sulfate) by cyclic voltammetry. Tyramine oxidase is immobilized onto the surface of the resultant poly(luminol–benzidine sulfate) film so as to oxidize dopamine and produce H2O2 for ECL detection. The ECL signal increases linearly with the concentration of dopamine in the range of 1–20 nM with the optimized electrode. The obtained biosensor exhibits a detection limit of 0.5 nM. It shows almost no response to the excess amount of interferents like ascorbic acid and uric acid with a 100-fold concentration of dopamine. Therefore, this work may provide a promising sensor with high sensitivity and selectivity for dopamine detection.