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Carbon quantum dots nanosensors for detection of acetylcholinestarase activity and its inhibitor

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Fluorescent carbon quantum dots (CQDs) have been constructed to determine the activity of acetylcholinestarase (AChE) and to screen its inhibitors. Herein, the approach relied on the fact that the enhanced fluorescence of CQDs could be effectively quenched by copper (II) ions due to strong coordination of copper ions with the carboxyl groups present on the CQDs. Furthermore, thiol compounds released by acetylthiocholine iodide (ATCh) under AChE catalytic hydrolysis could interact with copper ions owing to stronger affinity between thiocholine and copper ion resulting in the fluorescence recovery of CQDs. On the addition of an inhibitor paraoxon, the activity of the enzyme decreased and the fluorescence recovery of CQDs is also restricted. The developed protocol provides a new and promising platform for assaying AChE and screening its inhibitors with low cost and high sensitivity.

Biography

Reshma has completed her M.Sc at the age of 22 year from Pt. Ravishankar Shukla University and PhD studies from School of Studies in Chemistry, Pt Ravishankar Shukla University, Raipur. She is Research Scholar. She has communicated two papers in reputed journals.

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