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Investigation of the performance of carbon quantum dots as pseudo-enzymatic catalase in inhibiting hydrogen peroxide in the body.

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Rerecently,The enzyme catalase is the main regulator of hydrogen peroxide metabolism. Hydrogen peroxide in high concentrations is a toxic agent, while in low concentrations it performs some physiological processes such as signalling in cell proliferation, apoptosis, carbohydrate metabolism and platelet activationI [1]. Synthetic enzymes with high stability and performance have attracted the attention of many scientists [2]. In this project, we prepared carbon quantum dots (CQDs) by the hydrothermal method and their activity as catalase enzyme in the decomposition of hydrogen peroxide into water and oxygen was investigated. The activity of the CQDs was measured by UV-visible spectroscopy. The prepared Catalase were identified using EDS, FT-IR, PL, TGA, CHN and UV-vis spectroscopy.As a result, the CQDs could be used as synthetic catalase enzyme to inhibit the action of hydrogen peroxide in body cells.

Keywords: carbon Quantum Dots, Catalase Pseudo-Enzyme, Hydrogen Peroxide,

References

[1] Palopoli, C.; Bruzzo, N.; Hureau, C.; Ladeira, S.; Murgida, D.; Signorella, S. *Inorg. Chem.* **2011**, *50* (18), 8973–8983.

[2] Batinić-Haberle, I.; Rebouças, J. S.; Spasojević, I. **2010**, *13* (6), 877–918.