Assessing Meat Freshness via Nanotechnology Biosensors: Is the World Prepared for Lightning-fast-paced Methods?

ABSTRACT

In the rapidly evolving field of food science, nanotechnology-based biosensors are one of the most intriguing techniques for tracking meat freshness. Purine derivatives, especially hypoxanthine and xanthine, are important signs of food going bad, especially in meat and meat products. This article compares the analytical performance parameters of traditional biosensor techniques and nanotechnology-based biosensor techniques that can be used to find purine derivatives in meat samples. In the introduction, we discussed the significance of purine metabolisms as analytes in the field of food science. Traditional methods of analysis and biosensors based on nanotechnology were also briefly explained. A comprehensive section of conventional and nanotechnology-based biosensing techniques is covered in detail, along with their analytical performance parameters (selectivity, sensitivity, linearity, and detection limit) in meat samples. Furthermore, the comparison of the methods above was thoroughly explained. In the last part, the pros and cons of the methods and the future of the nanotechnology-based biosensors that have been created are discussed.