

THE EFFECT OF A NOVEL PHOTODYNAMIC ACTIVATION APPROACH TO EXTEND FISH SHELF LIFE AND QUALITY

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INTRODUCTION

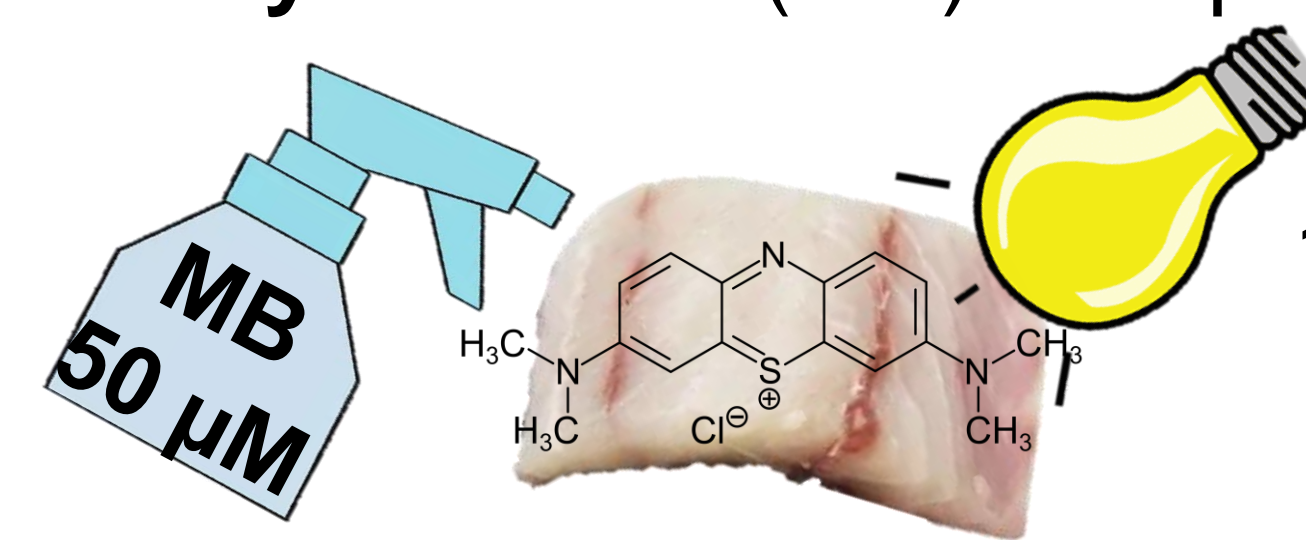
- Fish is a nutritious but perishable food, **susceptible to spoilage from microorganism growth** and biochemical changes that occur during handling and storage¹;
- To ensure **fish preservation**, it is essential to develop **effective disinfection** techniques that **safeguard its quality**;
- **Photodynamic inactivation (PDI)** has recently emerged as a **promising method for disinfecting food**². However, its impact on fish preservation has not been thoroughly investigated yet.

AIM OF THE STUDY

Evaluate the potential of PDI to extend fish fillets shelf life while assessing its impact on the quality of the food product.

METHODOLOGY

PDI treatments were performed on fish fillet using **Methylene blue (MB)** as a photosensitizer.



1 h (each side) at 100 mW.cm⁻²

PDI disinfection treatment

Chilling storage

Collection of samples before treatment and during refrigeration

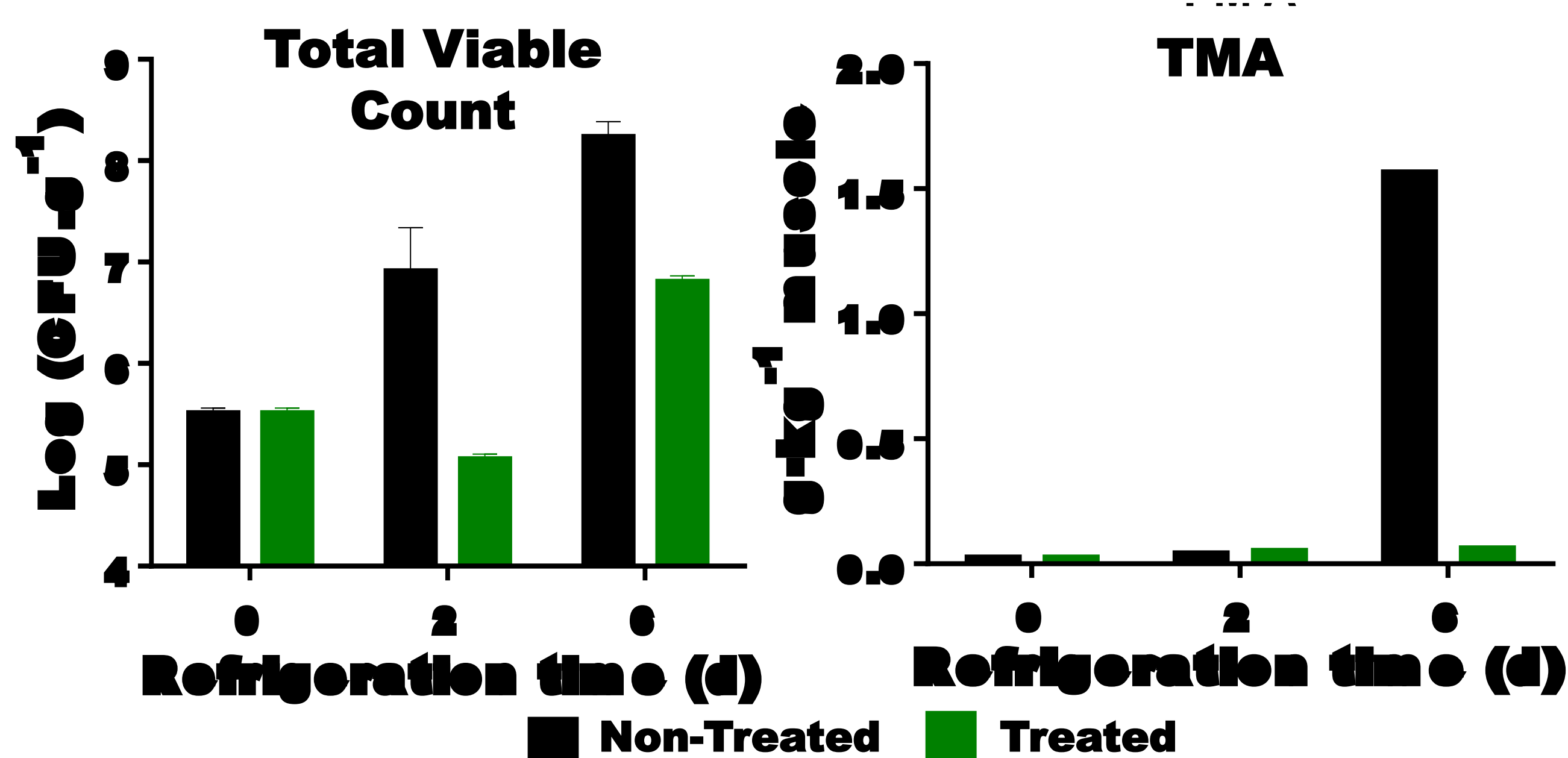
Microbiological analysis

Trimethylamine (TMA) analysis

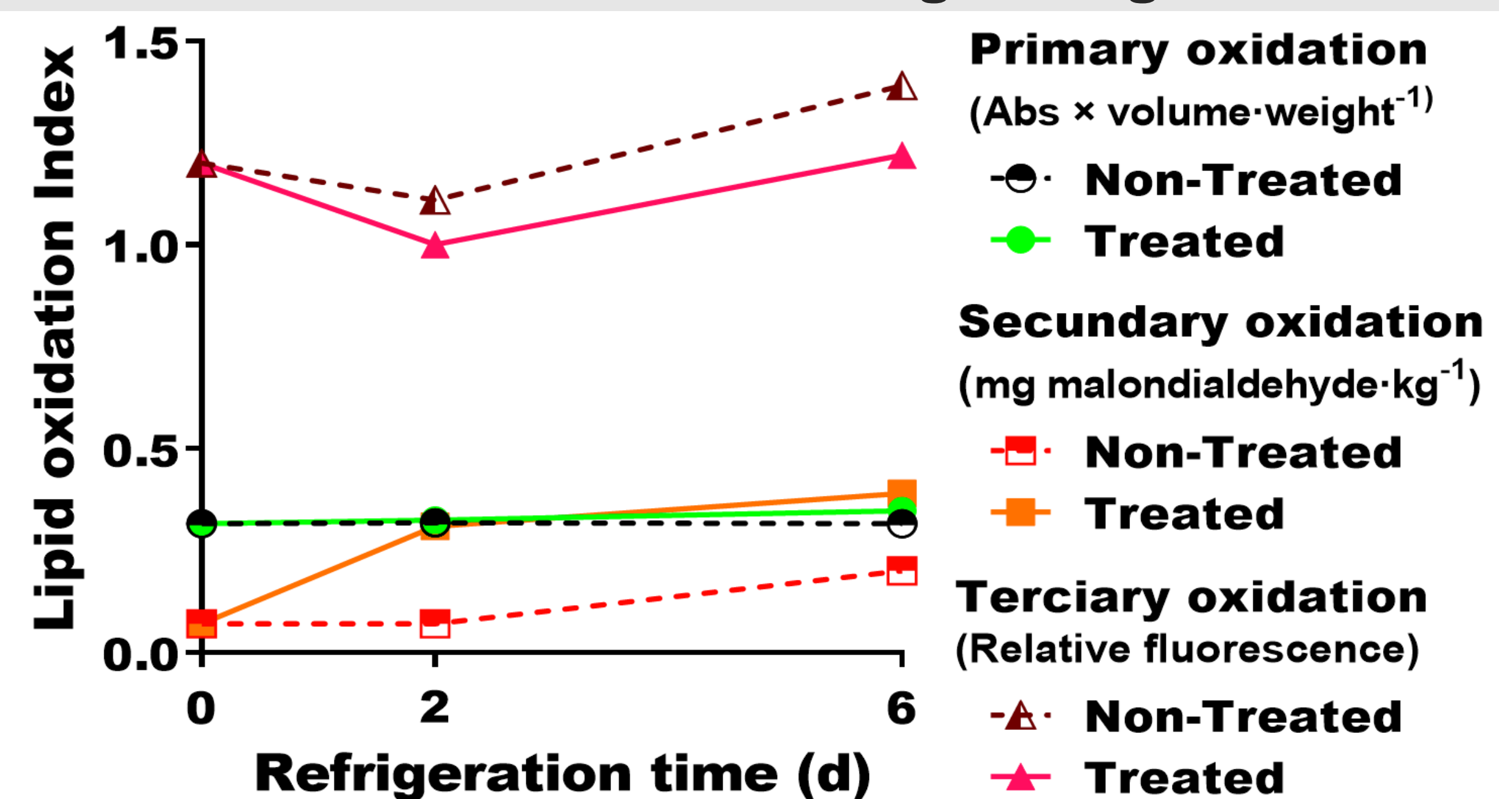
Lipid Damage and Polyenes Index (PI) analysis

RESULTS

PDI treatments delayed the growth of microorganisms and TMA production by 4 days



Similar lipid damage observed for treated and non-treated fish during storage



PI, a polyunsaturated fatty acids damage index, was not affected by PDI treatments or storage

CONCLUSIONS

- PDI effectively prolonged the shelf life of fish fillets by inhibiting microbiological growth;
- Treatments did not cause significant negative changes in fish quality:
 - TMA production, the primary cause of off-odors in fish products, was effectively inhibited;
 - The minimal lipid damage observed did not result in a polyunsaturated fatty acids content loss.

ACKNOWLEDGEMENTS

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