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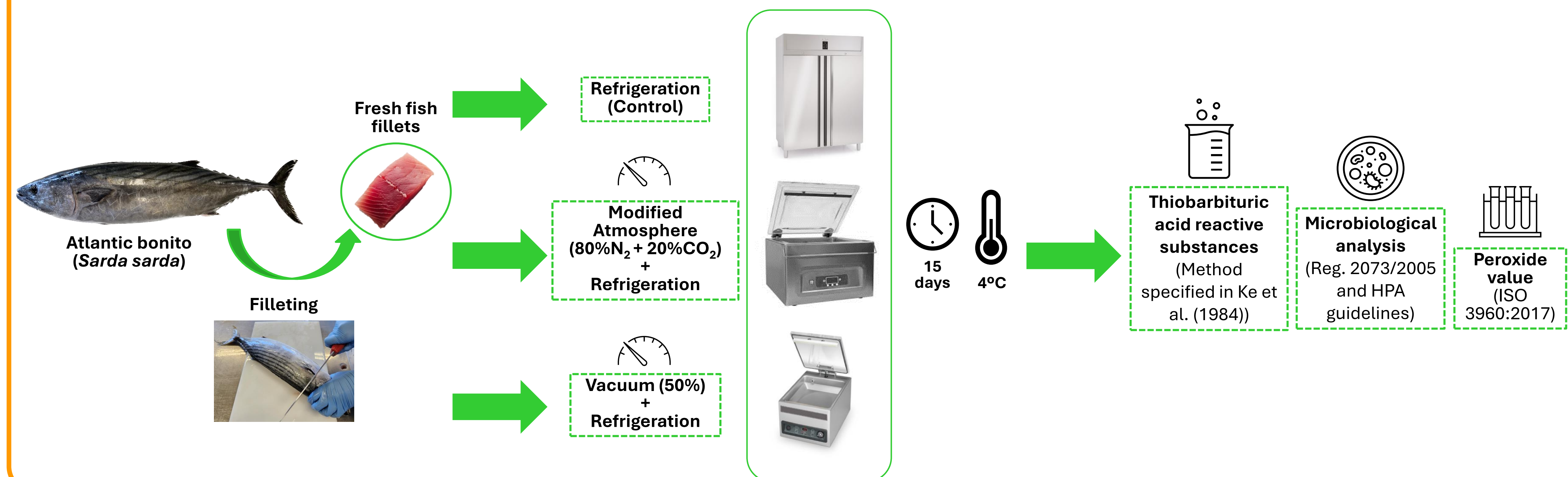
INTRODUCTION

Nowadays, developing effective preservation methods to extend the shelf-life of fish is essential for reducing waste and enhancing consumption. Additionally, it is important to improve the organoleptic qualities of fish. Given that fish is a highly perishable product, special precautions are necessary throughout the stages from fishing to consumption to prevent rapid deterioration caused by chemical reactions, physical damage, and microbial proliferation.

AIM

This study aimed to evaluate the effects of different preservation techniques—vacuum (50%), modified atmosphere (80%N₂ + 20%CO₂), and refrigeration (control)—on the physicochemical and microbiological properties of Atlantic bonito fillets over 15 days of refrigeration storage at 4°C.

METHODOLOGY

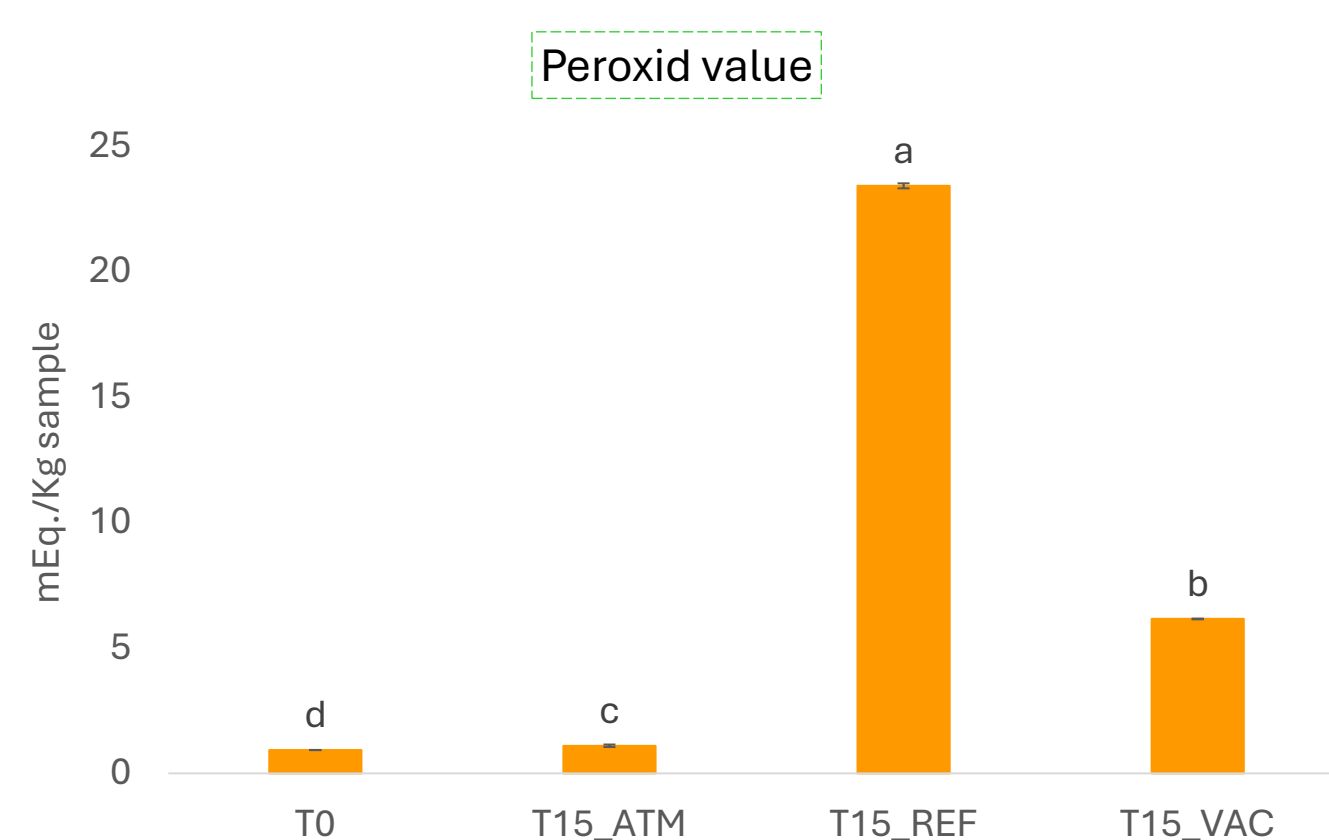


RESULTS

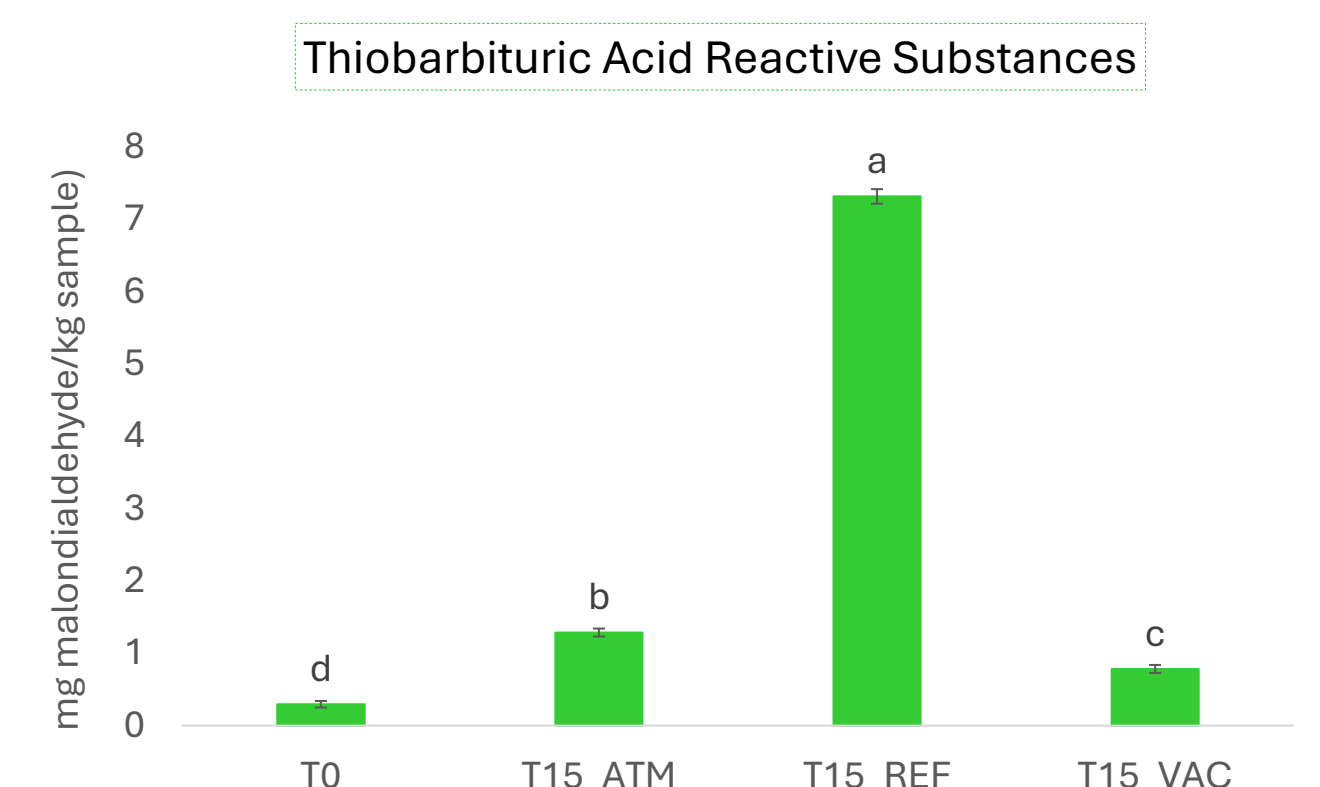
The results indicated that the peroxide value increased gradually over time for all preservation methods, with refrigeration showing the highest values and modified atmosphere showing the lowest, at 23,40±0,08 and 1,10±0,05 mEq./kg by day 15, respectively.

TBARS values also increased over time, with a slight increase for modified atmosphere and vacuum, at 1,29±0,06 and 0,78±0,06 mgMDA/kg by day 15, respectively, and a more significant increase for refrigeration, at 7,32±0,10 mgMDA/kg.

Both methods quantify primary oxidation compounds, revealing an increase in lipid oxidation over the storage period. Among the techniques, modified atmosphere packaging yielded the lowest oxidation values.



Graph 1 - Results of peroxide value (PV) of Atlantic bonito fillets during 15-days storage at 4°C in modified atmosphere, refrigeration and vacuum, respectively. Mean values ± standard deviation (n=3). Means within same column with different superscripts are significantly different at p<0.05.



Graph 2 - Results of Thiobarbituric Acid Reactive Substances (TBARS) of Atlantic bonito fillets during 15-days storage at 4°C in modified atmosphere, refrigeration and vacuum, respectively. Mean values ± standard deviation (n=3). Means within same column with different superscripts are significantly different at p<0.05.

Microbiological analysis demonstrated that Atlantic bonito fillets preserved in a modified atmosphere met satisfactory microbiological quality standards after 15 days, outperforming other techniques in maintaining microbial safety. The parameters analysed included total viable count at 30°C, moulds, yeasts, *Enterobacteriaceae*, *Coagulase Staphylococci* (+), *Listeria monocytogenes*, *Salmonella* spp., *Sulphite-reducing Clostridium* spores, *Lactic Acid Bacteria*, and *Vibrio Parahaemolyticus*.

CONCLUSION

In conclusion, modified atmosphere preservation is recommended for extending the shelf-life and maintaining the quality of Atlantic bonito fillets, offering a lower peroxidation activity and microbiological quality compared to vacuum and refrigeration methods.