

The effect of ozone treatment on shrimp (*Parapenaeus longirostris*) meat quality parameters during refrigerated storage



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Vanesa Begura¹, Martina Čagalj¹, Danijela Skroza², Helena Virić Gašparić³, Darija Lemić³, Vida Šimat¹

¹University Department of Marine Studies, University of Split, R. Boškovića 37, 21000 Split, Croatia

²Department of Food Technology and Biotechnology Faculty of Chemistry and Technology, University of Split, R. Boškovića 35, 21000 Split, Croatia

³Green Environmental Research Ltd., Avenija Dubrovnik 15, 10020, Zagreb, Croatia

INTRODUCTION

In this study, the effect of ozone treatment on shrimp (*Parapenaeus longirostris*) meat quality during storage was investigated. The aim of the treatment was to extend product shelf life.

MATERIALS AND METHODS

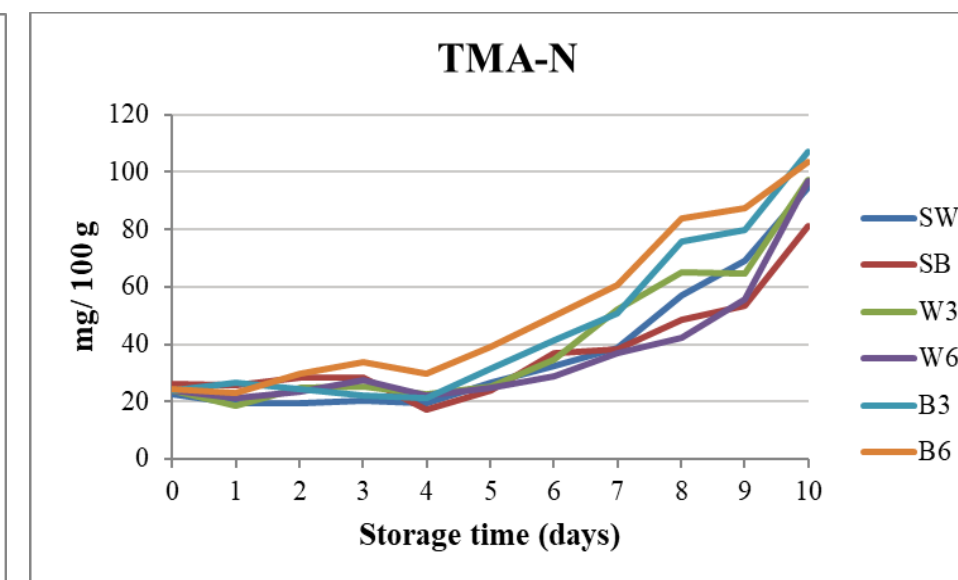
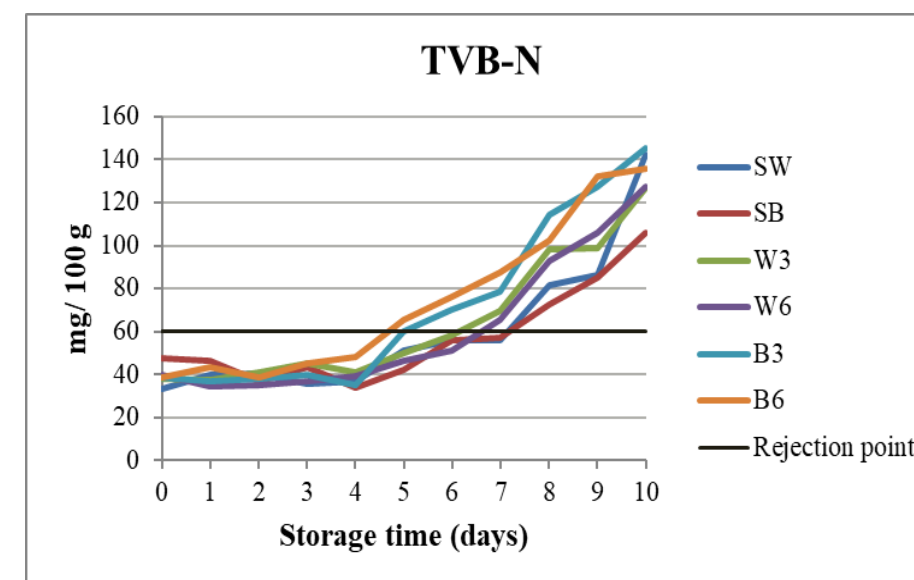
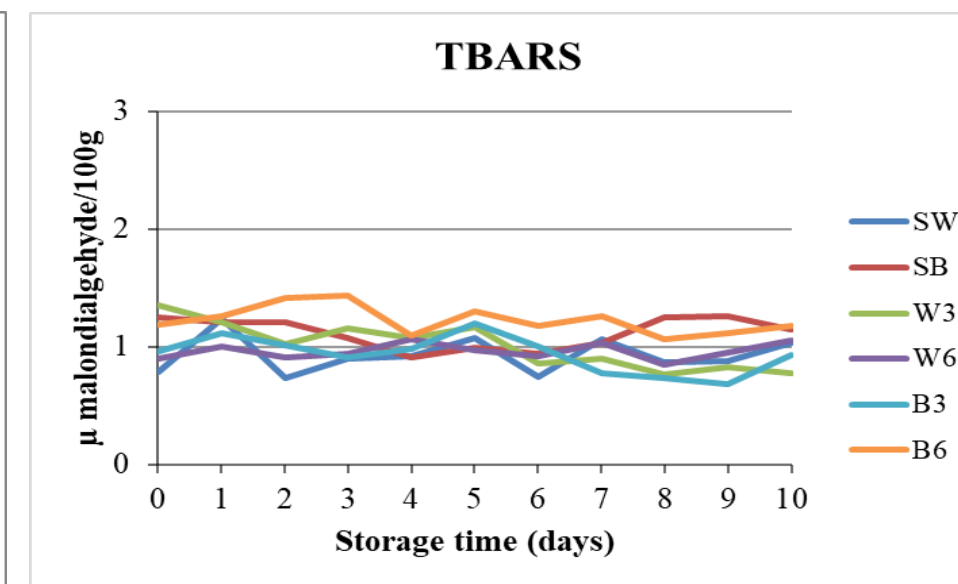
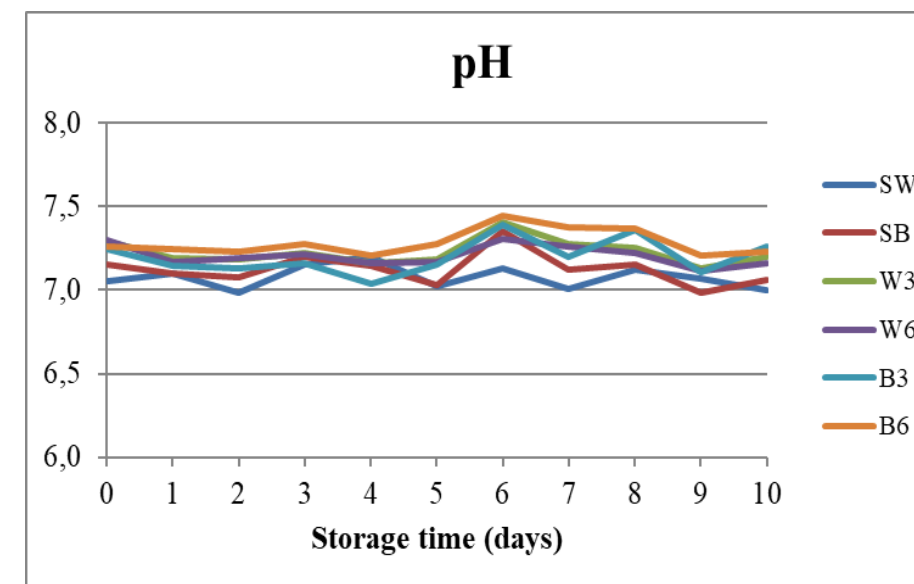
Water and 2% brine were cooled to 2-4°C using ice.

The solutions were divided and ozonized at the concentrations of 3 mg/L and 6 mg/L.

Shrimp meat was exposed to 4 treatments for 10 minutes by immersing in ozonized brine (3 mg/L – B3 and 6 mg/L – B6) and ozonized water (3 mg/L – W3 and 6 mg/L – W6).

After treatment, the shrimp meat was vacuum-packed and stored in refrigerated conditions (2-4 °C) for 10 days.

Each day, samples were tested for thiobarbituric acid reactive substances (TBARS), total volatile basic nitrogen (TVB-N), trimethylamine-nitrogen (TMA-N), and pH and the results were compared to those of control samples (shrimp meat in water - SW or brine – SB without ozone treatment).



RESULTS

Ozone treatment in water reduced lipid oxidation more effectively than ozone treatment in brine. Treatment with water at 3 mg/L reduced the TBARS values for 43% by the end of the storage period.

The TVB-N and TMA-N results increased through the storage period.

For the shrimp meat ozonized in water, lower TVB values were recorded compared to the control sample at the end of storage period. Treatment with water at 3 mg/L was the most effective. Shrimp meat treated with ozonized brine passed the rejection point of 60 mg/ 100g [1] before day 5, shrimp treated with ozonized water around day 6, and control samples after day 7.

The use of ozone treatments did not reduce the amount of trimethylamine in samples.

[1] Mendes et al. (2002). <https://doi.org/10.1007/s00217-001-0419-4>

CONCLUSION

Ozone treatment in tested concentrations does not intensify lipid oxidation of shrimp meat nor it has a significant effect on shelf life prolongation.

