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Can nitrite-free recipes of cured meat products prevent the formation of nitroso-compounds during digestion?

Biochimie et Protéines du Muscle
Unité QuaPA

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References:

(1) Chazelas et al. (2022). Int. J. Epidemiol. 1-14

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INTRODUCTION

The presence of nitrite in cured meat products can lead to the formation of nitroso-compounds (NOCs), some of which have been linked to a higher risk of developing colon cancer¹. The objective was to study the formation mechanism of NOCs in nitrite-free cured meat products during *in vitro* dynamic digestion.

RESULTS

Nitrosylheme

Nitrosylheme was <15% in products without added nitrite (NC) and YE.

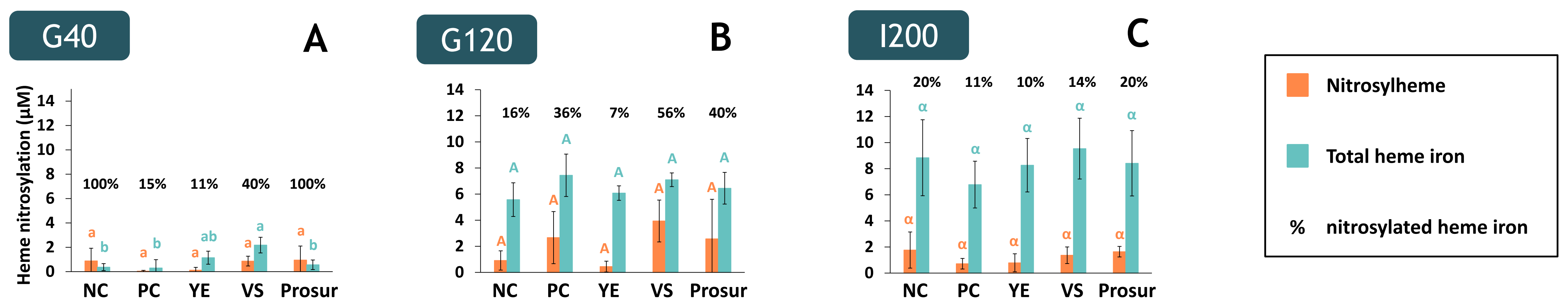


Figure 1. Nitrosylheme content was assessed after A) 40 min, B) 120 min, and C) 200 minutes of digestion. NC = negative control, PC = positive control, YE = yeast extract, VS = vegetable stock.

Nitrosamines

Nitrosamines were higher at the beginning of gastric digestion for PC and VS, but decreased during digestion for all samples to reach very low levels.

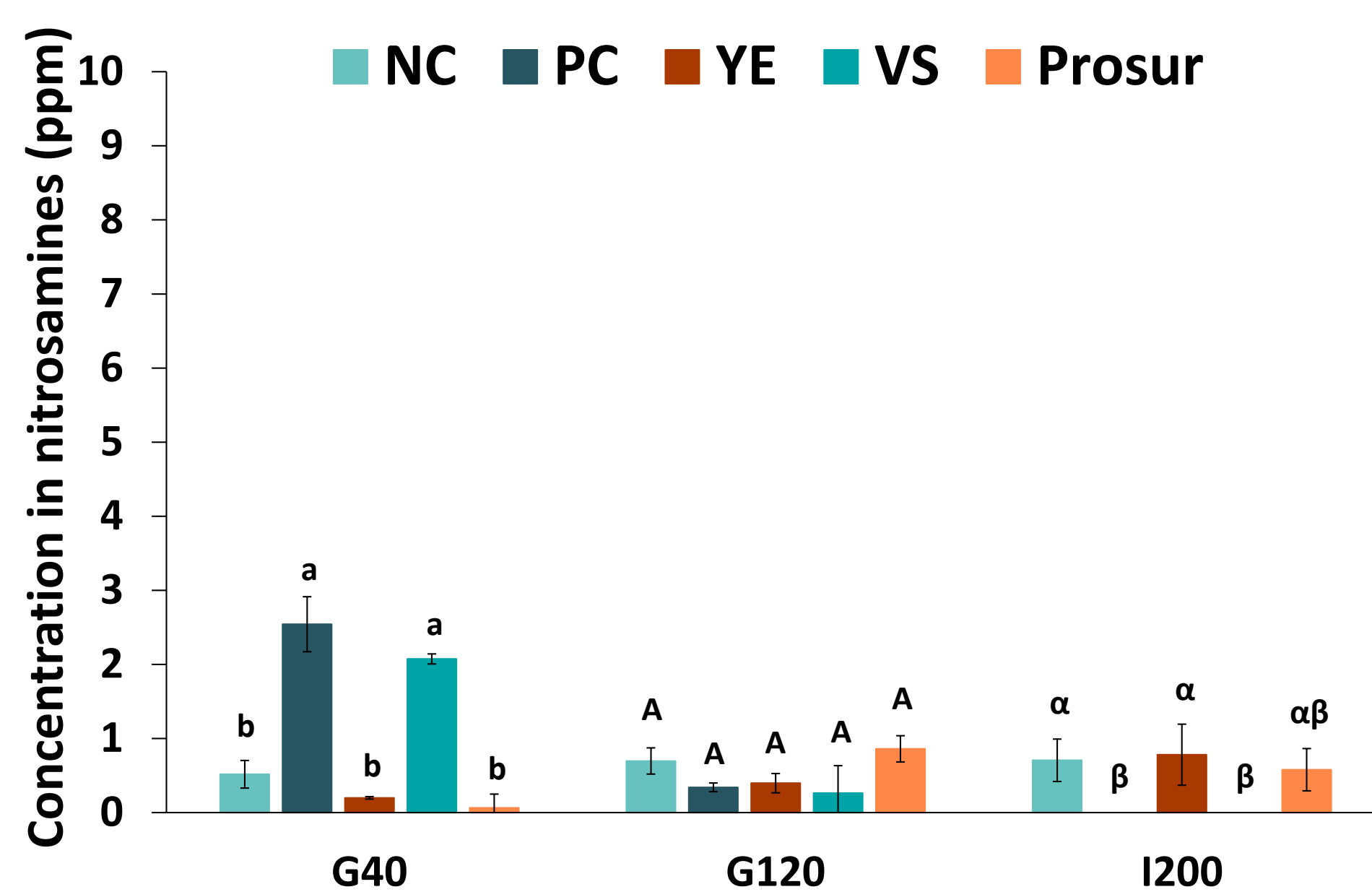


Figure 2. Nitrosamines level throughout the digestion.

Lipid oxidation

In the intestinal phase of digestion, lipid oxidation increased for all samples regardless of the formulation.

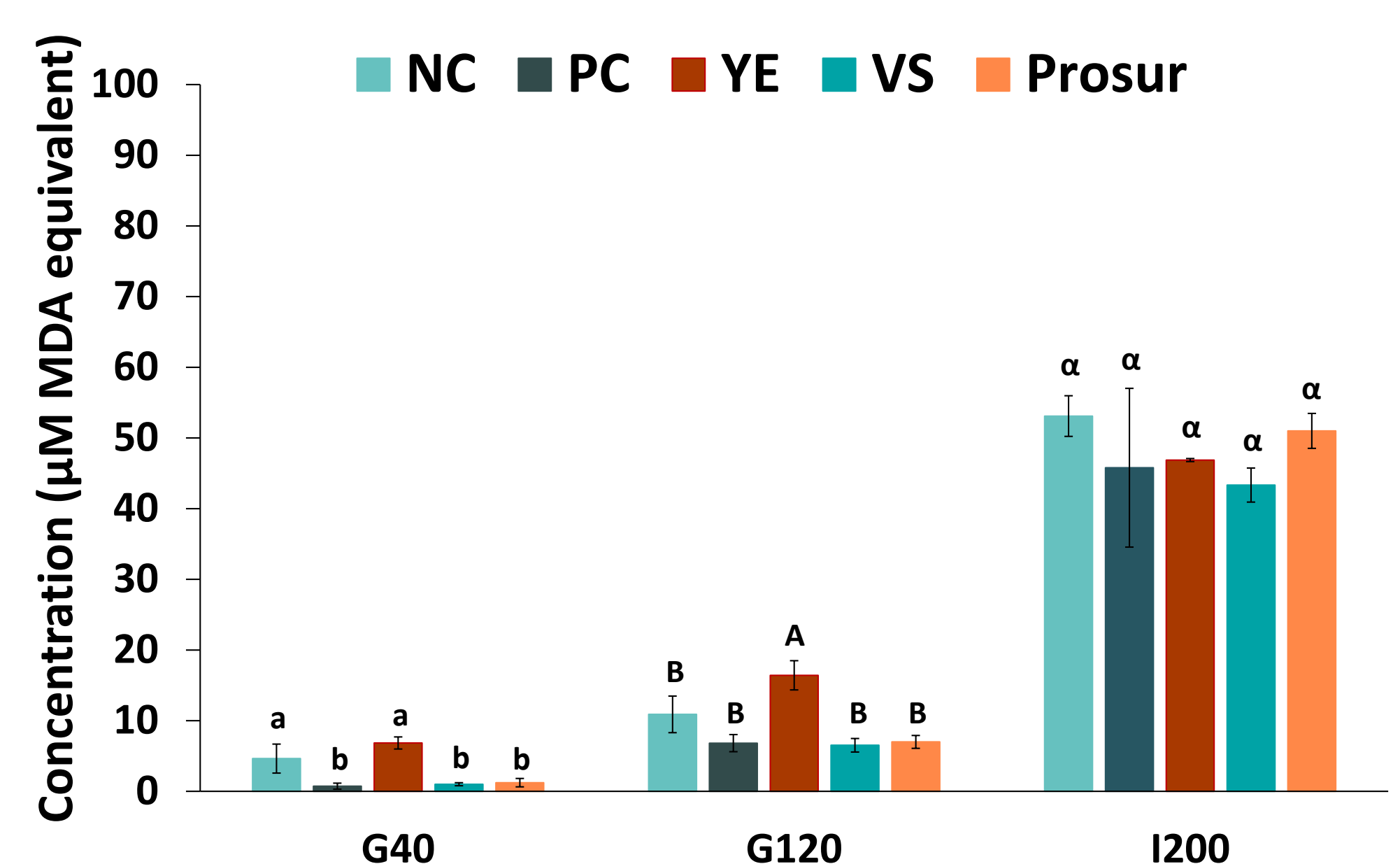


Figure 3. Lipid oxidation level throughout the digestion.

CONCLUSIONS

Nitrite-free recipes can reduce NOCs formation in cured meat products *in vitro*. However, lipid oxidation in nitrite-free products is important in the intestinal phase, and could lead to the development of colorectal cancer. Studies *in vivo* are required to validate the results presented herein, and their impact on colon mucosa.

Nitrite-free recipes:

