

Extending poultry meat shelf life through the application of *Cynara cardunculus* L. leaf extracts

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INTRODUCTION

Cynara cardunculus L., commonly named cardoon, is a multipurpose crop that includes three varieties, the globe artichoke (var. *scolymus* (L.) Fiori), the cultivated cardoon (var. *atilis* DC.), and the wild cardoon (var. *sylvestris* (Lamk) Fiori)¹.

Its flower is normally used as vegetal rennet in the production of some cheeses and its leaves, the main by-product generated, are known for its excellent antioxidant and antimicrobial activities¹.

These properties may be an asset in the food industry as cardoons' leaves may be used to delay lipid oxidation and microbial growth, thus prolonging foods' shelf life.

This study aims to evaluate the effectiveness of cultivated cardoon leaves and the globe artichoke leaves ethanolic extracts, on poultry meat preservation stored under refrigeration (5°C ± 2°C) for 15 days.

MATERIAL AND METHODS

Microbiological Growth

- Total mesophilic aerobic microorganisms²
- Total psychrotrophic aerobic microorganisms³
- *Enterobacteriaceae*⁴

Physicochemical Characterization

- Moisture⁵
- pH⁵
- Titratable acidity⁵
- Colour⁶
- Total volatile basic nitrogen (TVB-N)⁵

Lipid Oxidation

- Thiobarbituric Acid Reactive Substances (TBARS) Index⁷

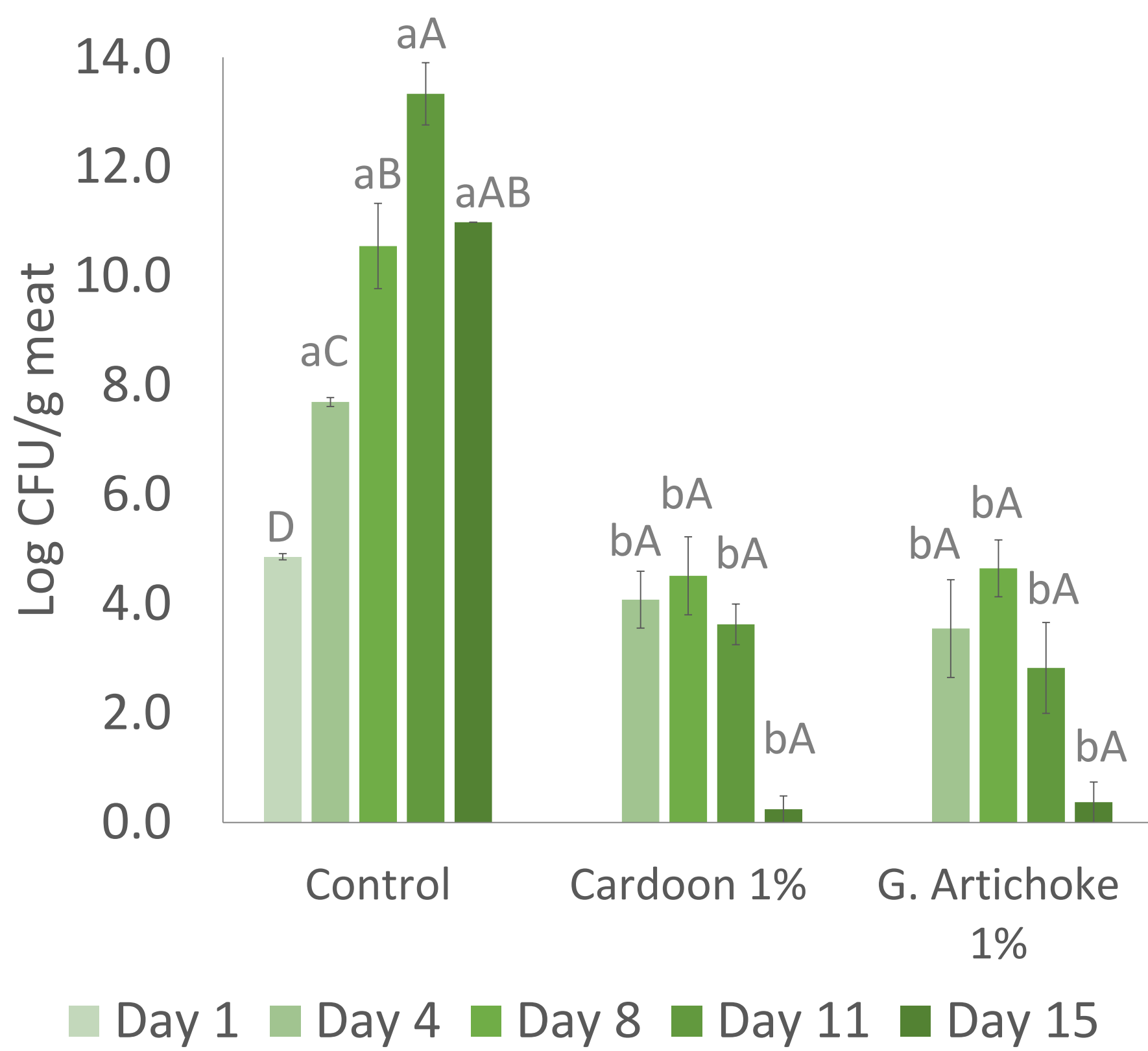
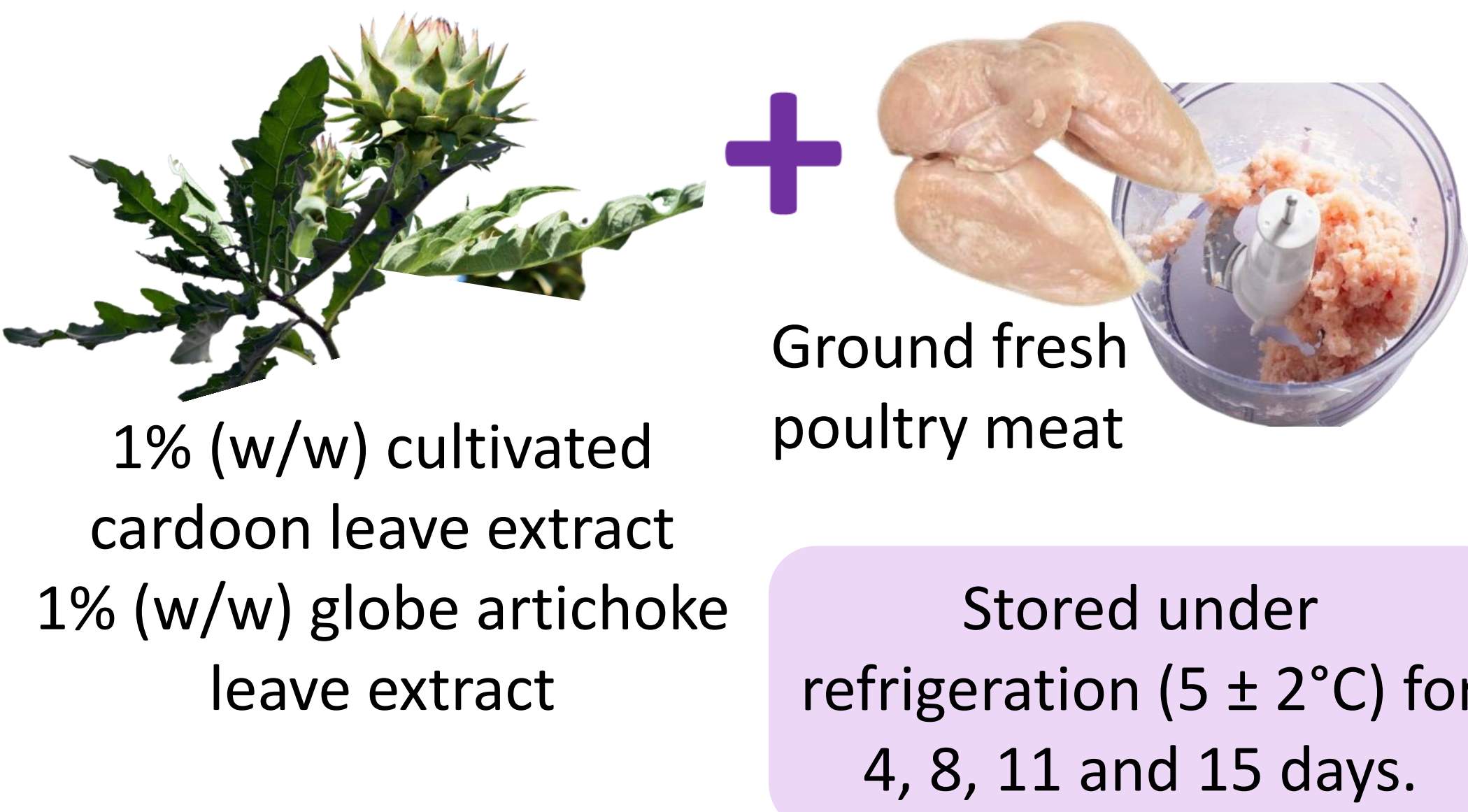


Fig. 1 – Results of the Total mesophilic aerobic microorganisms expressed as Log CFU/g meat

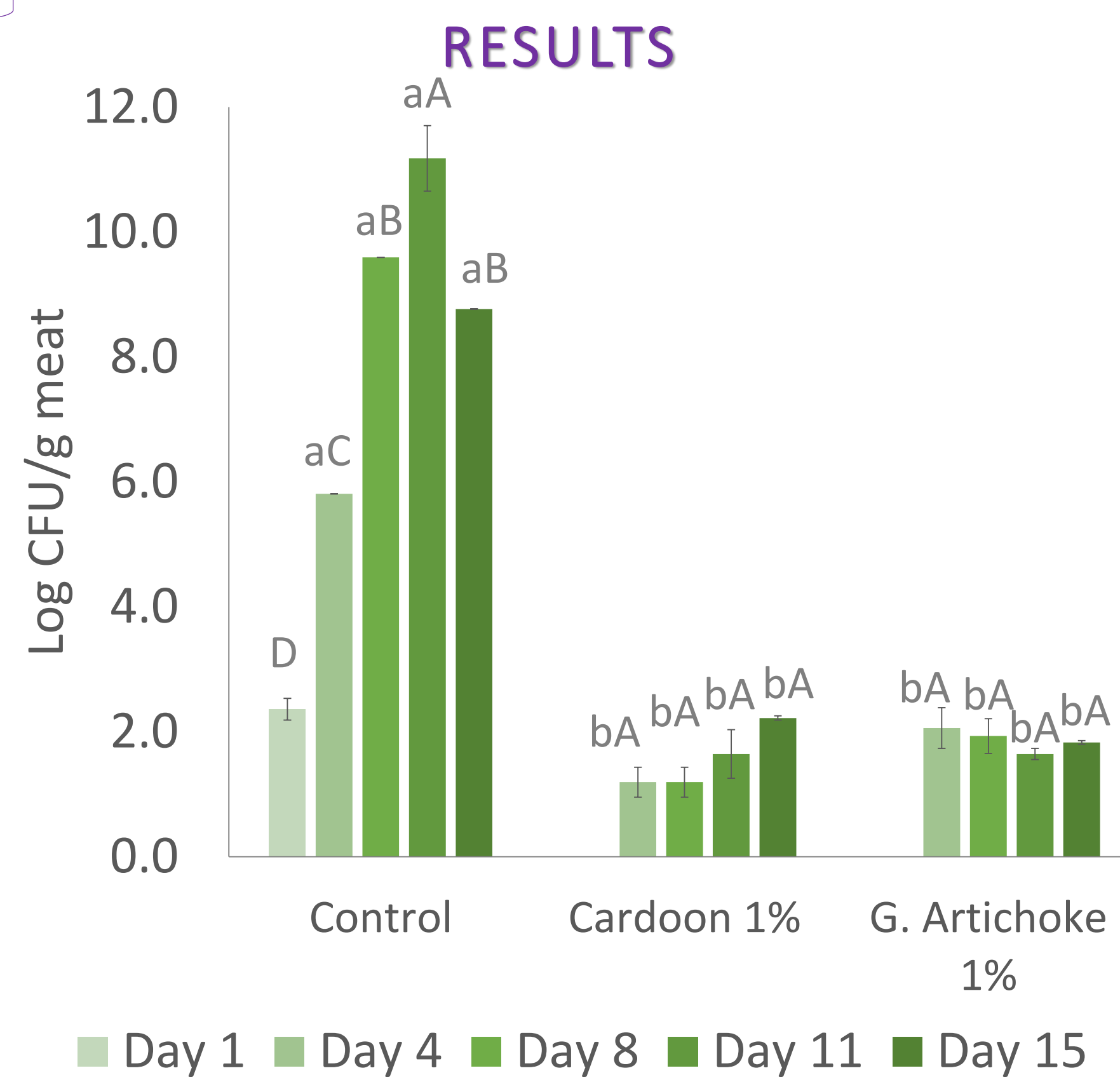


Fig. 2 – Results of the *Enterobacteriaceae* microorganisms expressed as Log CFU/g meat

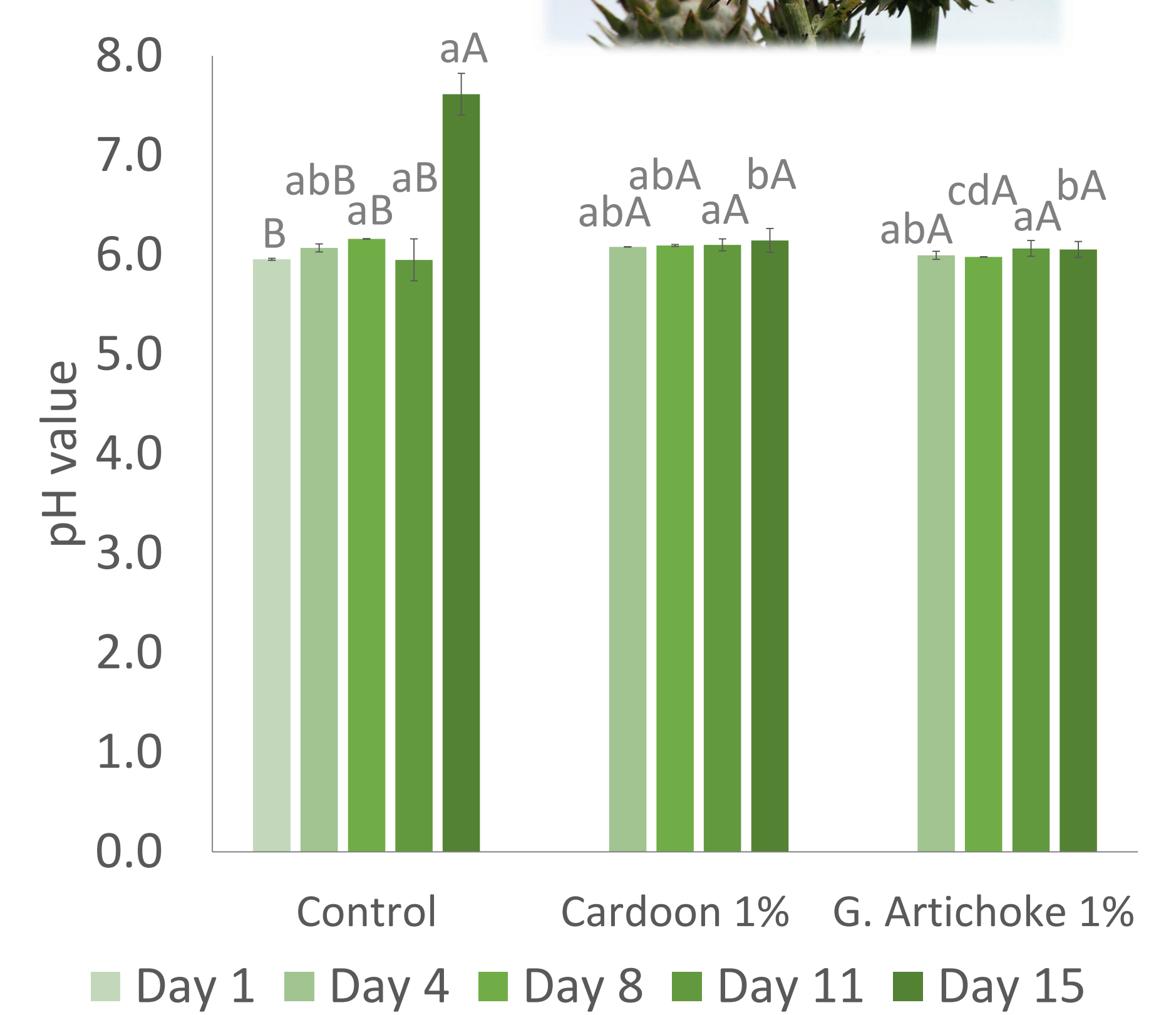


Fig. 3 – Results of the pH value

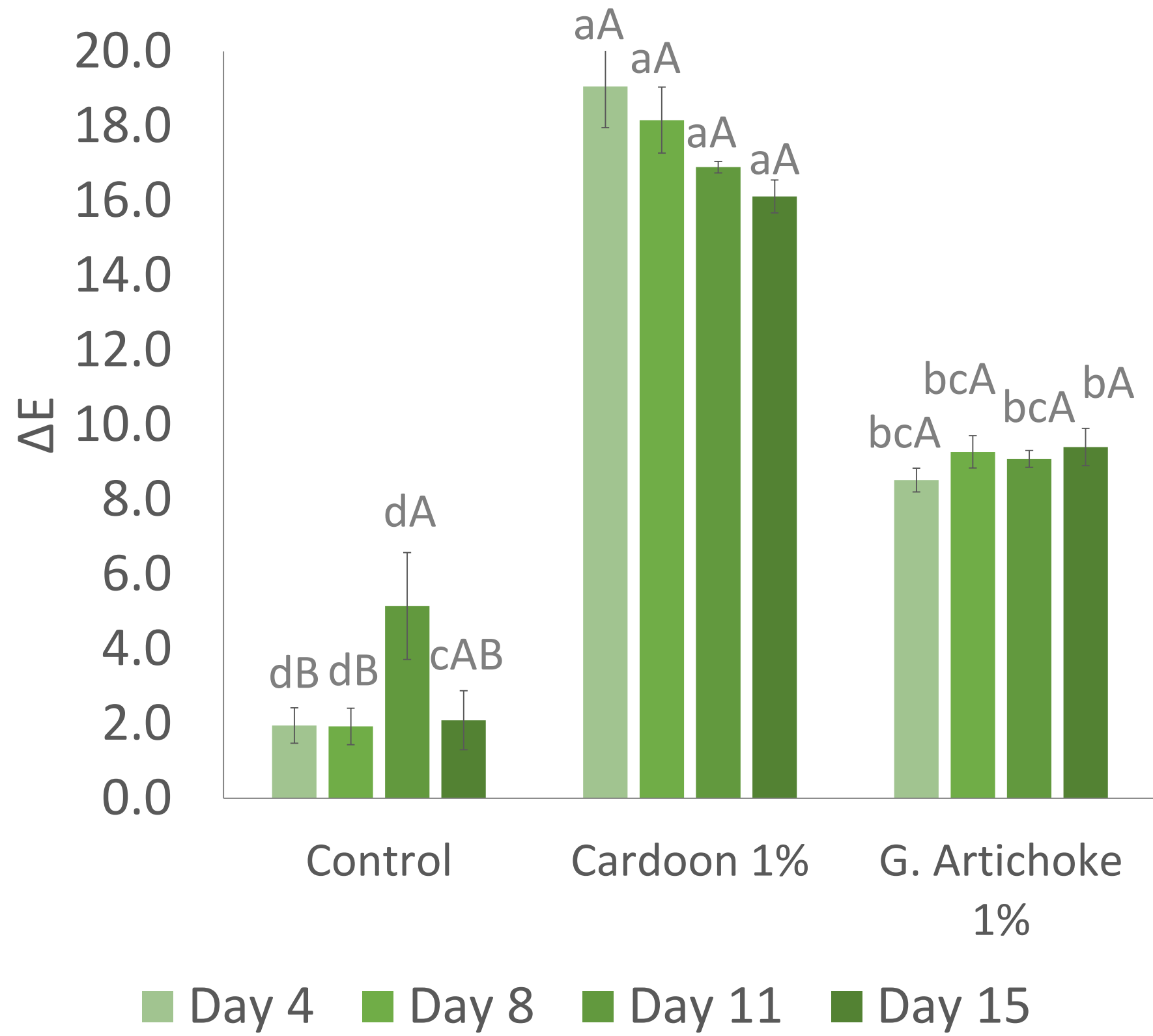


Fig. 4 – Results of the colour difference

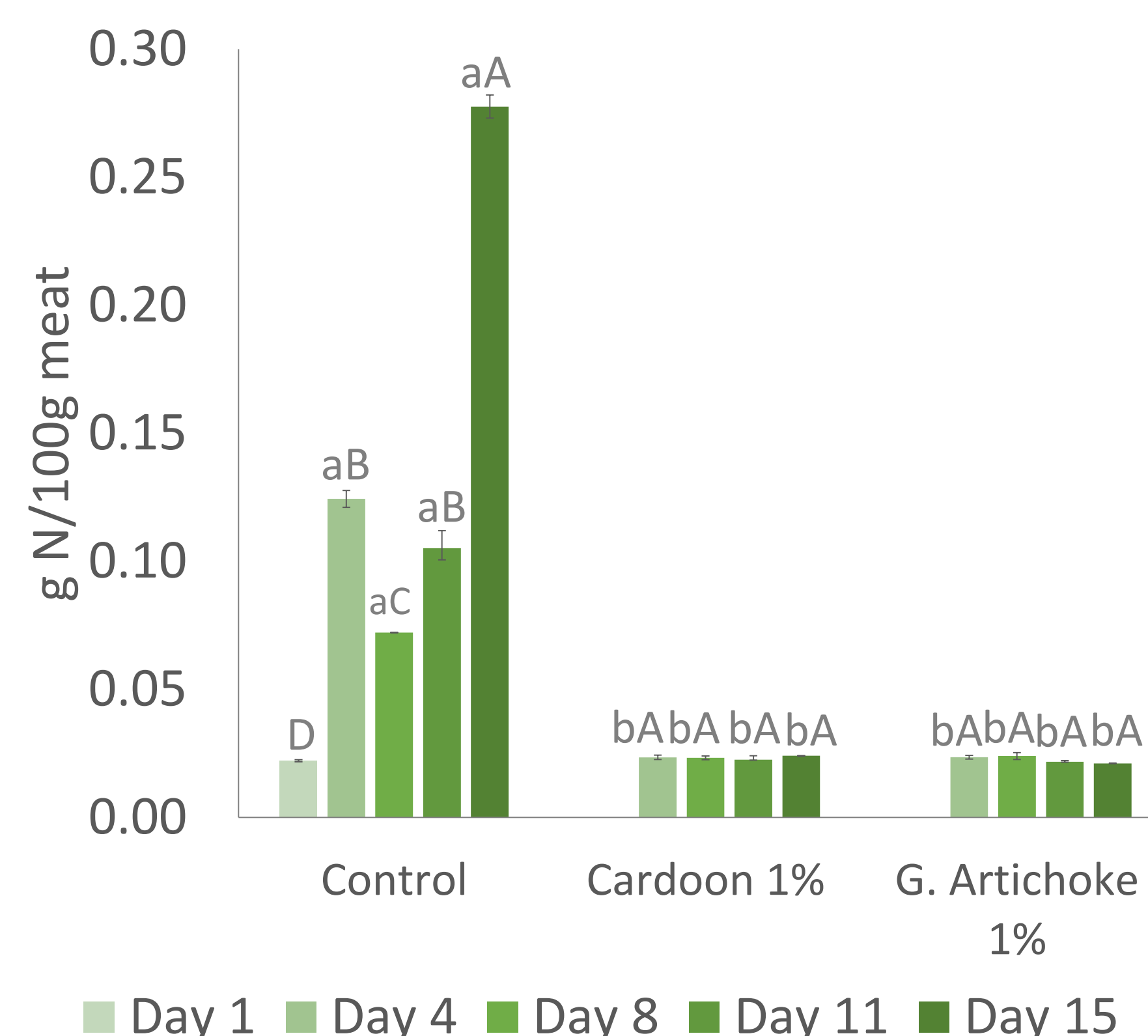


Fig. 5 – Results of the total volatile basic Nitrogen expressed as g N/Kg meat

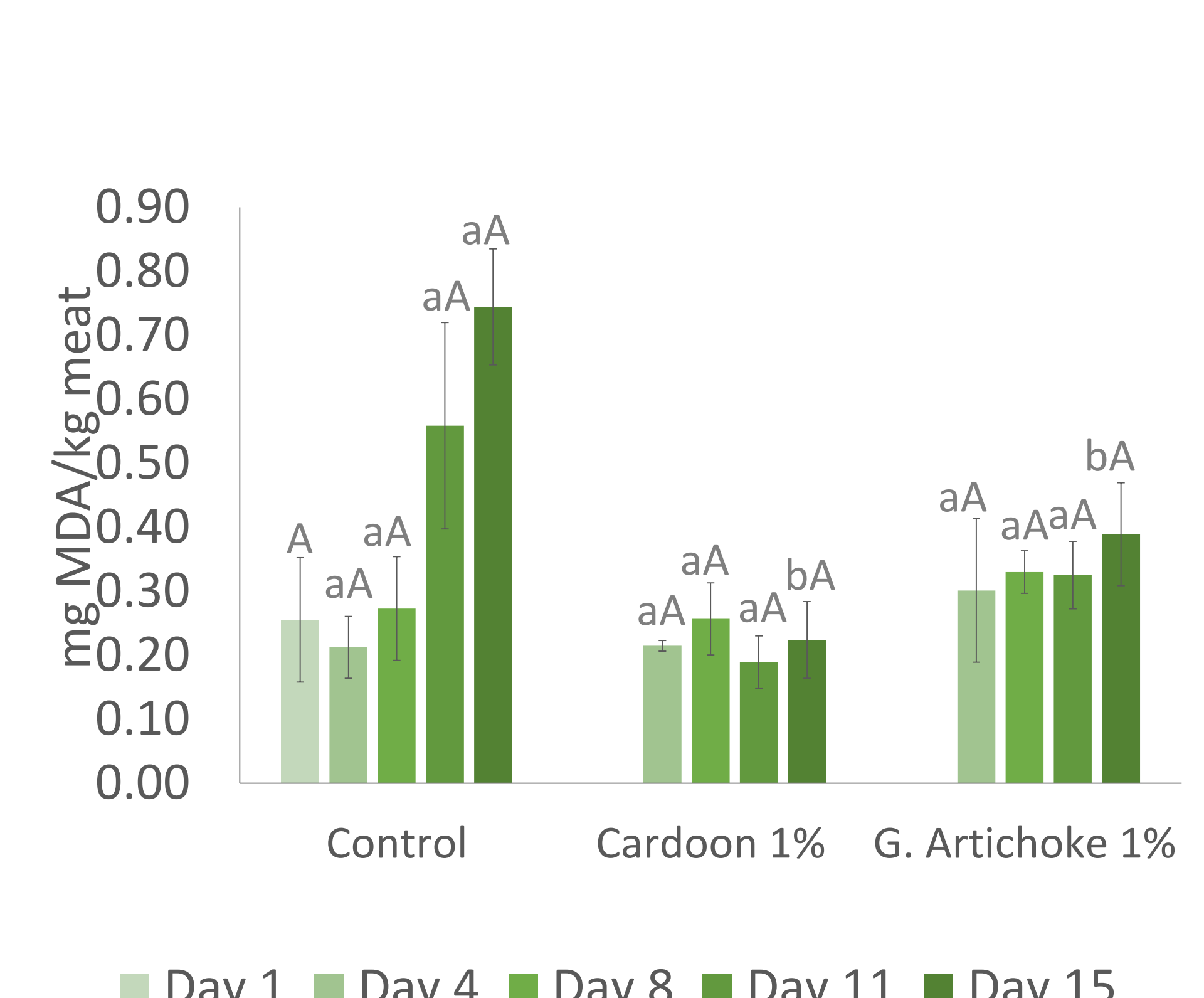


Fig. 6 – Results of TBARS assay expressed as mg MDA/kg meat

CONCLUSIONS

Both extracts were effective in maintaining constant pH, level of acidity and moisture content. The extracts were also effective in retarding microbial growth thus minimizing the release of volatile basic nitrogen at the end of the assay. In addition, both extracts were able to reduce the lipid oxidation of the poultry meat when compared to the control samples, at the end of the assay. The colour of extracts can be a limitation due to the greenish-yellow colour that is seen in the meat, although it was more evident in the sample with the cultivated cardoon extract. Cultivated cardoon leaves extract was the most effective in extending poultry meat shelf life.