

Evaluation of the effect of two biostimulant treatments on qualitative parameters of different varieties of *Brassica oleracea*

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Introduction

The demand for fresh, functional, and nutraceutical foods has increased in recent decades, due to the growing interest in their healthy attributes. These characteristics are due to the accumulation of phytonutrients and secondary metabolites, including phenols, carotenoids and glucosinolates. Many studies proved the effectiveness of biostimulants on improving vegetables yield, quality, and phytochemicals accumulation.

This work aims to understand the effects of two biostimulants on some quality parameters in three different cabbage (*Brassica oleracea*) varieties (classified as, early, medium, late, based on the length of the growing cycle).

Materials and Methods

Plants were grown under field conditions and two commercial biostimulants were tested: Megafol[®], applied as soil drain treatment and Actiwave[®], administered as a foliar spray. The products were applied 15 days and 1 day before harvest.

At harvest, the qualitative evaluation products included the determination of total and reducing sugars, sucrose, total glucosinolates, chlorophyll, total carotenoids, phenolics, and total anthocyanins.

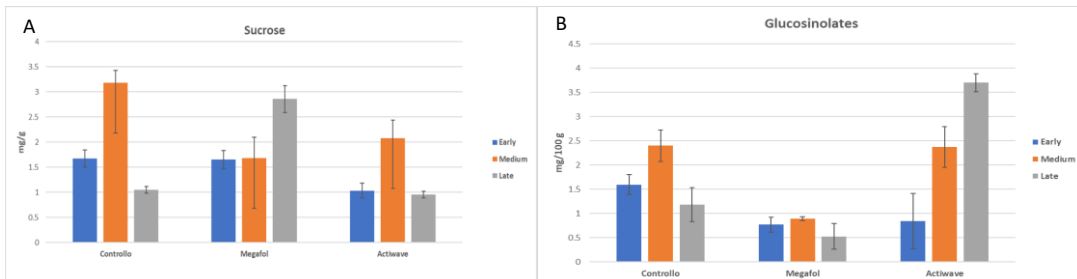


Figure 1: Changes in sucrose (A), glucosinolates (B), in different varieties of cabbage treated with biostimulants. (Data are means \pm SE; n=3).

Results

Results showed differences among the varieties and, in some cases, revealed the effectiveness of biostimulant treatments. The levels of sucrose increased in the late cabbage variety treated with Megafol[®] (Fig. 1A), while the total glucosinolates content in the medium-late variety decreased. Actiwave[®] treatment increased the amount of glucosinolates in the late variety (Fig. 1B). Megafol[®] increased the chlorophyll in the medium variety (Fig. 2A) and carotenoids were positively affected by both products (Fig. 2B), which improved the colour and antioxidant potential of cabbage. Actiwave[®] increased the phenolic concentration in the medium variety (Fig. 2C) and a slight increment in total anthocyanin was found in plants variety treated with both products (Fig. 2D).

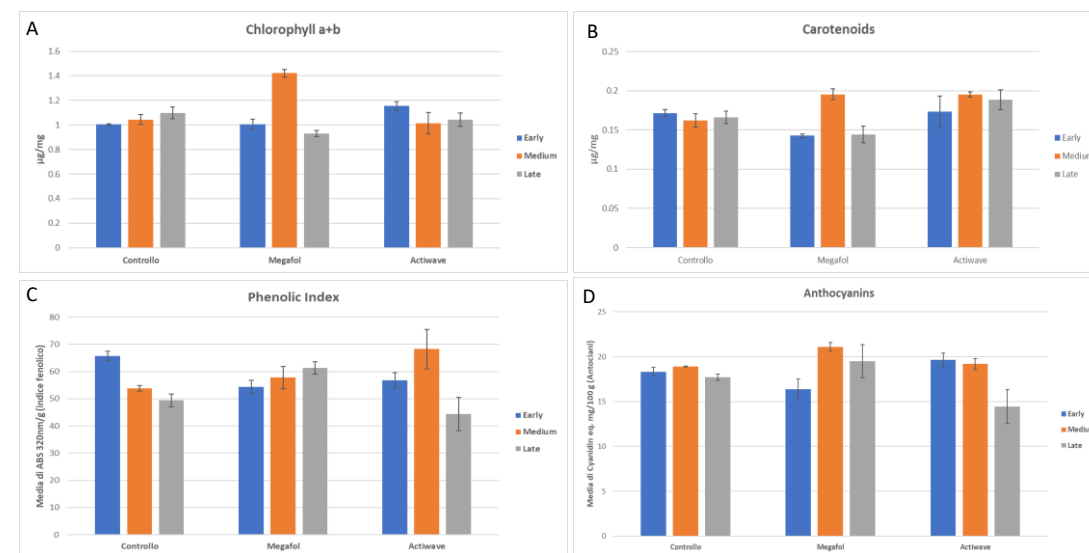


Figure 2: Changes in chlorophyll (A), carotenoids (B), phenolic index (C), and anthocyanins, in different varieties of cabbage treated with biostimulants. (Data are means \pm SE; n=3).

Conclusions

The results showed different responses depending on the product applied and in combination with the genotypic differences. Further research will help to clarify which biostimulant is the best for each specific variety, individuating the best conditions to improve the nutraceutical potential of the crops and to maximize the final product quality.

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