

EVALUATION OF ANTIOXIDANT PROPERTIES OF MICROGREENS GROWN UNDER DIFFERENT CONDITIONS

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Introduction

- **microgreens:** young and tender, newly sprouted, immature plants without roots
- rich sources of various **phytochemicals**, including polyphenols
- impact of proper **growing conditions:** growing medium, light source

Objectives

- data on polyphenol content, antioxidant capacity and flavonoid and monomeric anthocyanin content of microgreens
- combined impact of species, growing medium and light source

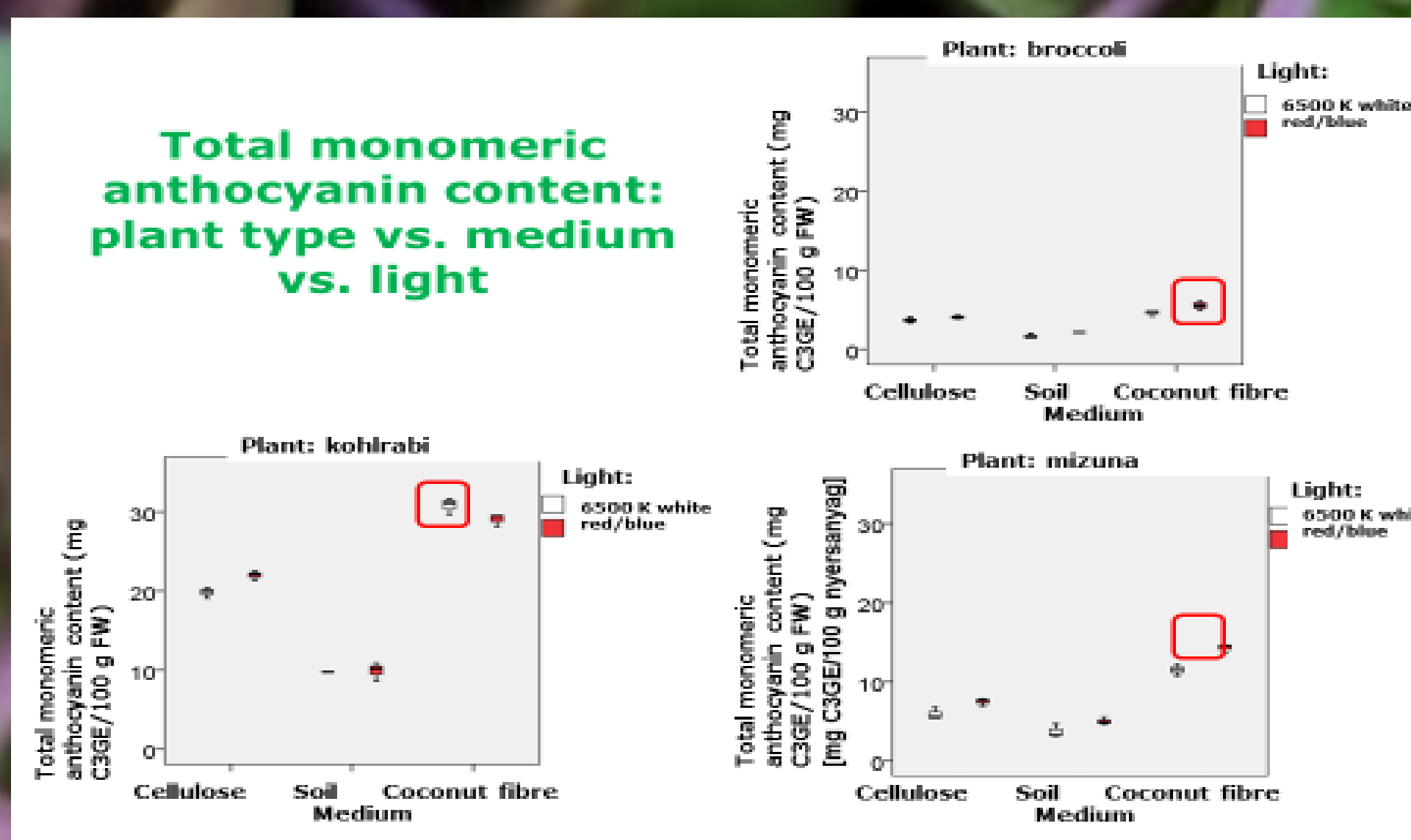
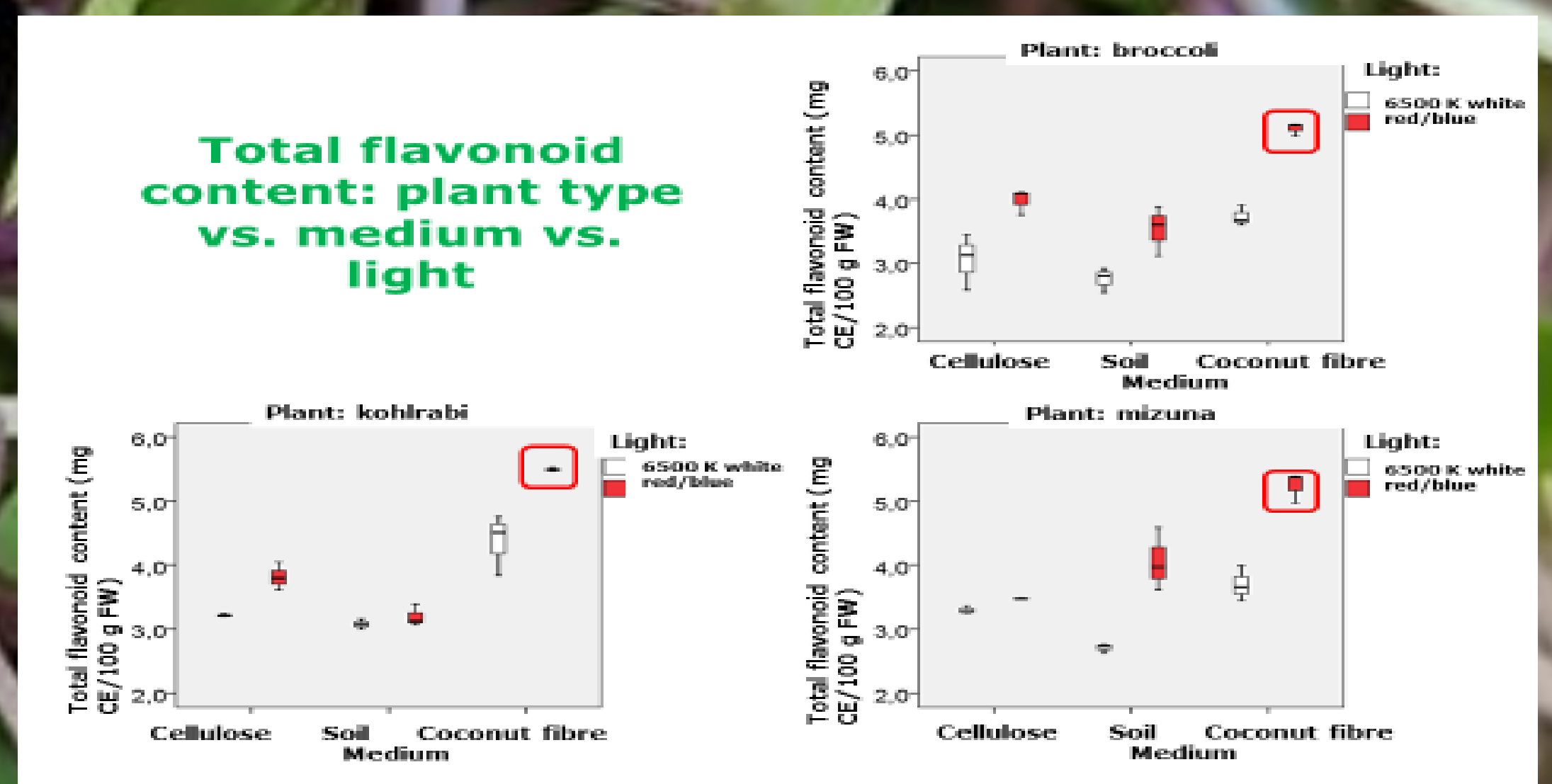
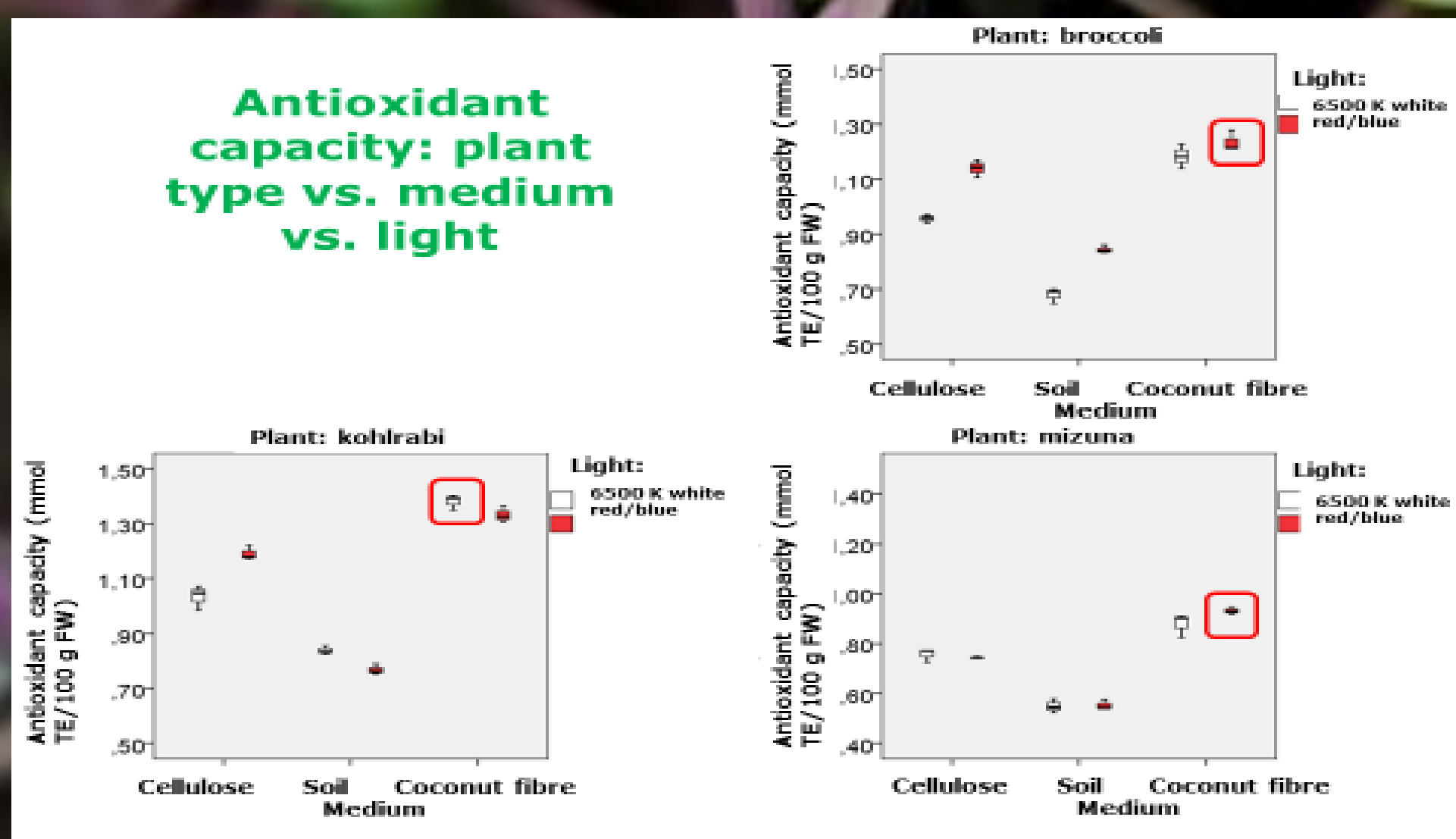
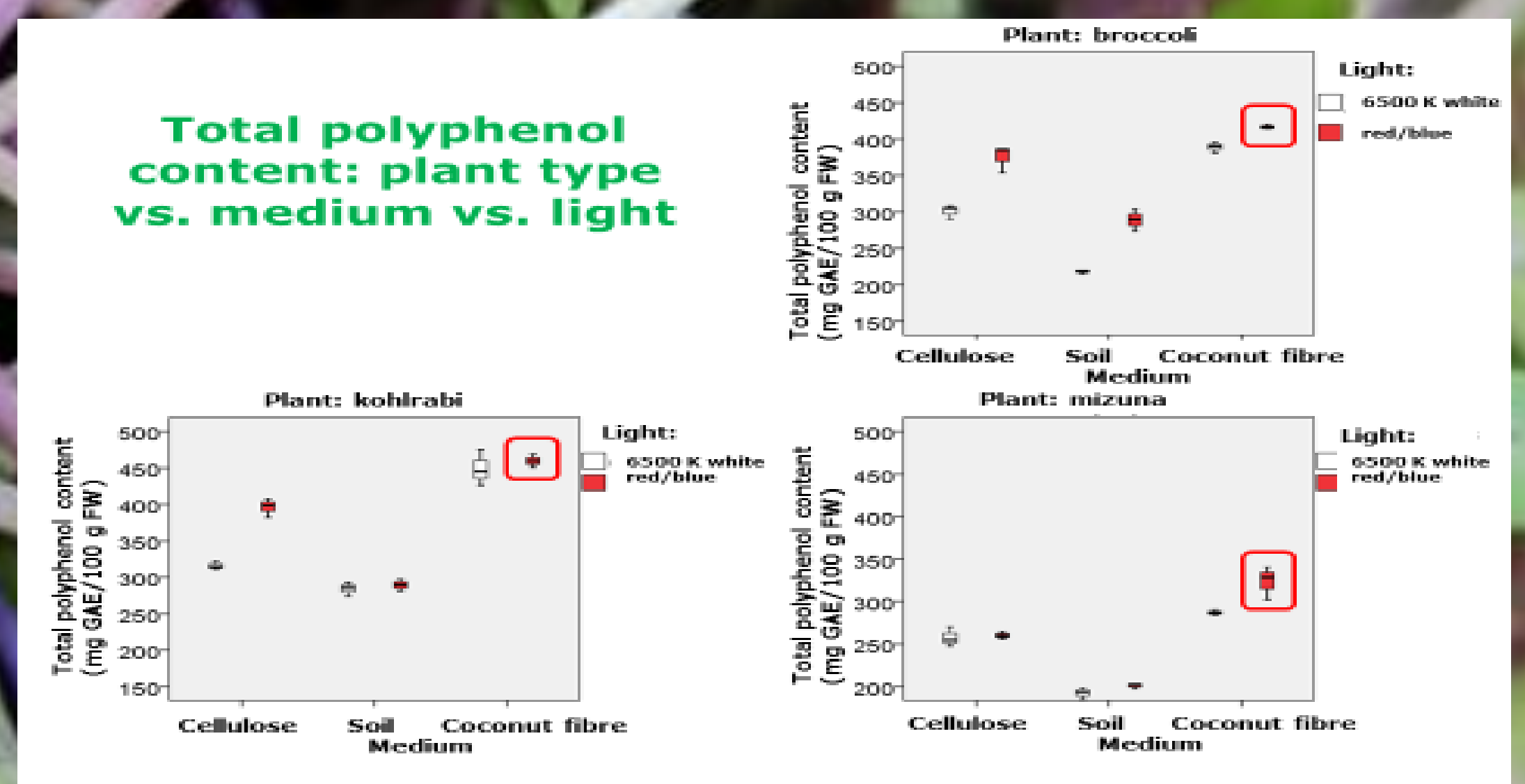
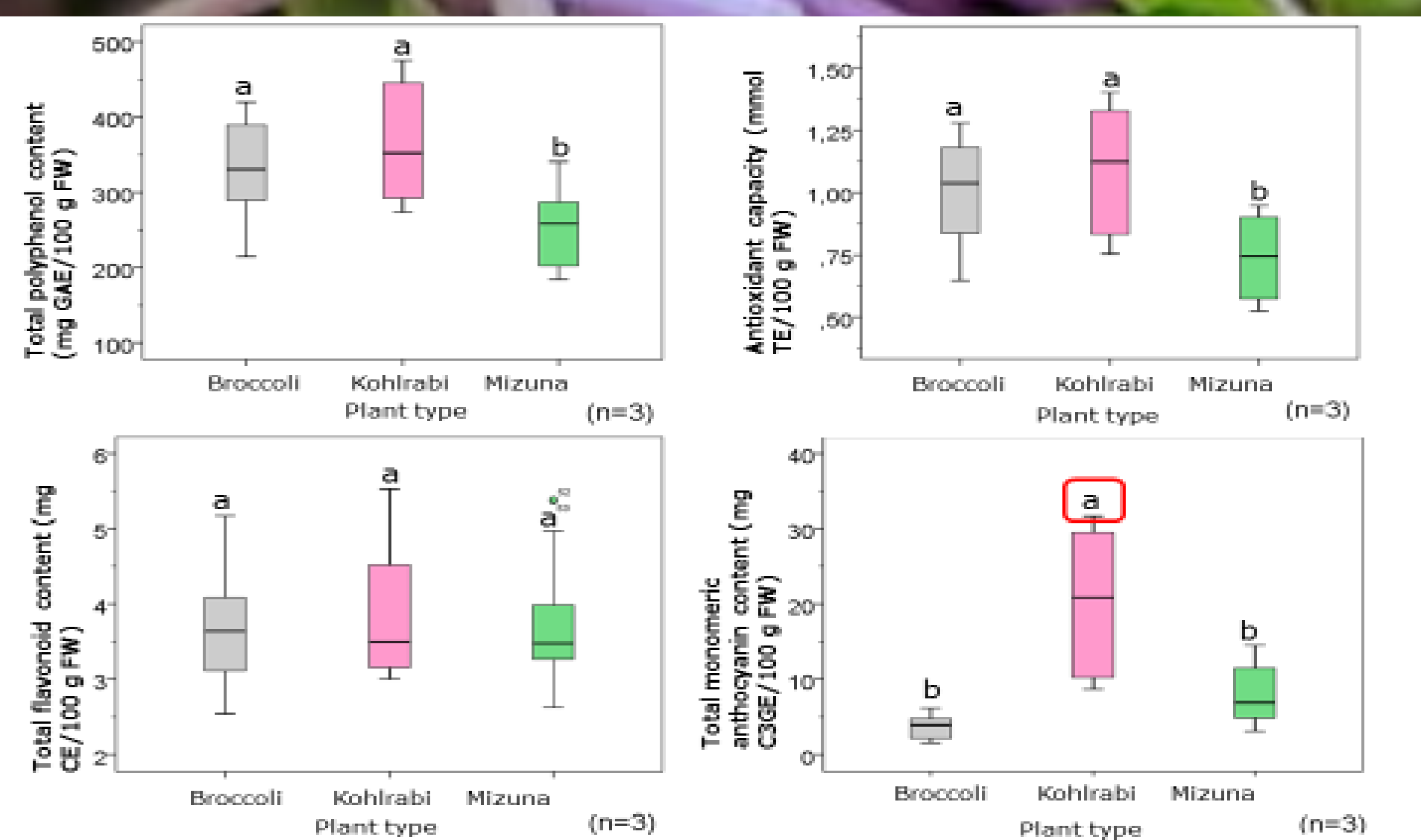
Samples: *Brassica* (broccoli, mizuna, kohlrabi) microgreens grown on untreated coconut, pure cellulose fiber or normal soil under 6500 K white light vs. red/blue light

Methods: Folin-Ciocalteu (total polyphenol), copper(II)-ion reduction (CUPRAC), total flavonoid (AlCl₃ method) and monomeric anthocyanin content (pH differential method)

Data evaluation: ANOVA test, Tukey HSD post-hoc test, Shapiro-Wilk and Levene-tests

Results

- **Differences** in total phenolic concentration, antioxidant capacity, flavonoid and monomeric anthocyanin content depend primarily on the **botanical origin**
- **Kohlrabi:** highest monomeric **anthocyanin** content
- **Growing medium:** highest values were achieved for untreated **coconut fiber**, lowest values for normal soil- coconut fibre exerts a high **stress** due to its high Na- and K-ion load
- **Light source:** significant differences, higher values for intermittent **red/blue light**
- **Interactions: medium ~ light** observed for each plant type
- Strong **correlation:** phenolics vs. antioxidant capacity
- **Microgreens: high nutritional potential**, i.e. considerable antioxidant power and phenolics, including flavonoid and monomeric anthocyanin content



References:

- Di Gioia, F., De Bellis, P., Mininni, C., Santamaria, P., & Serio, F. (2016). Physicochemical, agronomical and microbiological evaluation of alternative growing media for the production of rapini (*Brassica rapa* L.) microgreens. *Journal of the Science of Food and Agriculture*, 97(4), 1212–1219.
- Negri, M., Bulgari, R., Santoro, P. and Ferrante, A. (2021). Evaluation of different growing substrates for microgreens production. *Acta Horticulture*. 1305, 109-114.

