ASSESSMENT OF THE PHYSIOLOGICAL STATE OF DANDELION IN RURAL ENVIROMENT

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INTRODUCTION

Diffuse agricultural pollutants, such as agricultural residues, fertilisers, pesticides and excessive salt release in the environment have potentially devastating effects on the plants. Common dandelion (*Taraxacum officinale* Weber) is herbaceous perennial with wide geographic distribution that often grows in extremely polluted habitats. It is considered as good biological indicator of contamination since it can tolerate wide range of environmental conditions.

MATERIAL AND METHODS

The aim of this study was to assess the physiological state of dandelion in rural environment by measuring iron (III) reducing antioxidant capacity (iRAC) and ferric reducing antioxidant power (FRAP) that describes antioxidative activity. Total phenolic content (PHE), ascorbic acid content (AA) and total protein concentration (PROT) were determined as well. Dandelion leaves were collected at 30 different agricultural areas near Osijek that had differential exposure to pollution (polluted and non-polluted).
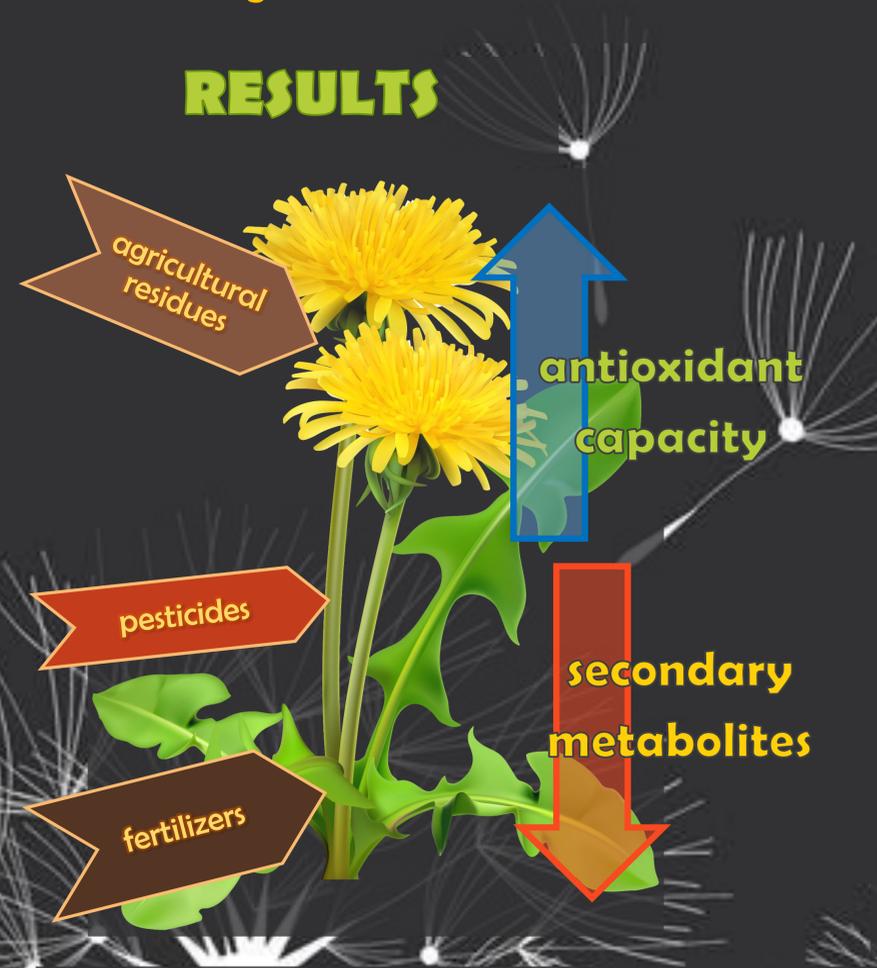
RESULTS

Figure 1 Significant increase of antioxidative capacity and PROT concentration in dandelions caused by agricultural pollutants in polluted agricultural areas near Osijek was accompanied with decrease of secondary metabolites, namely PHE and AA content.
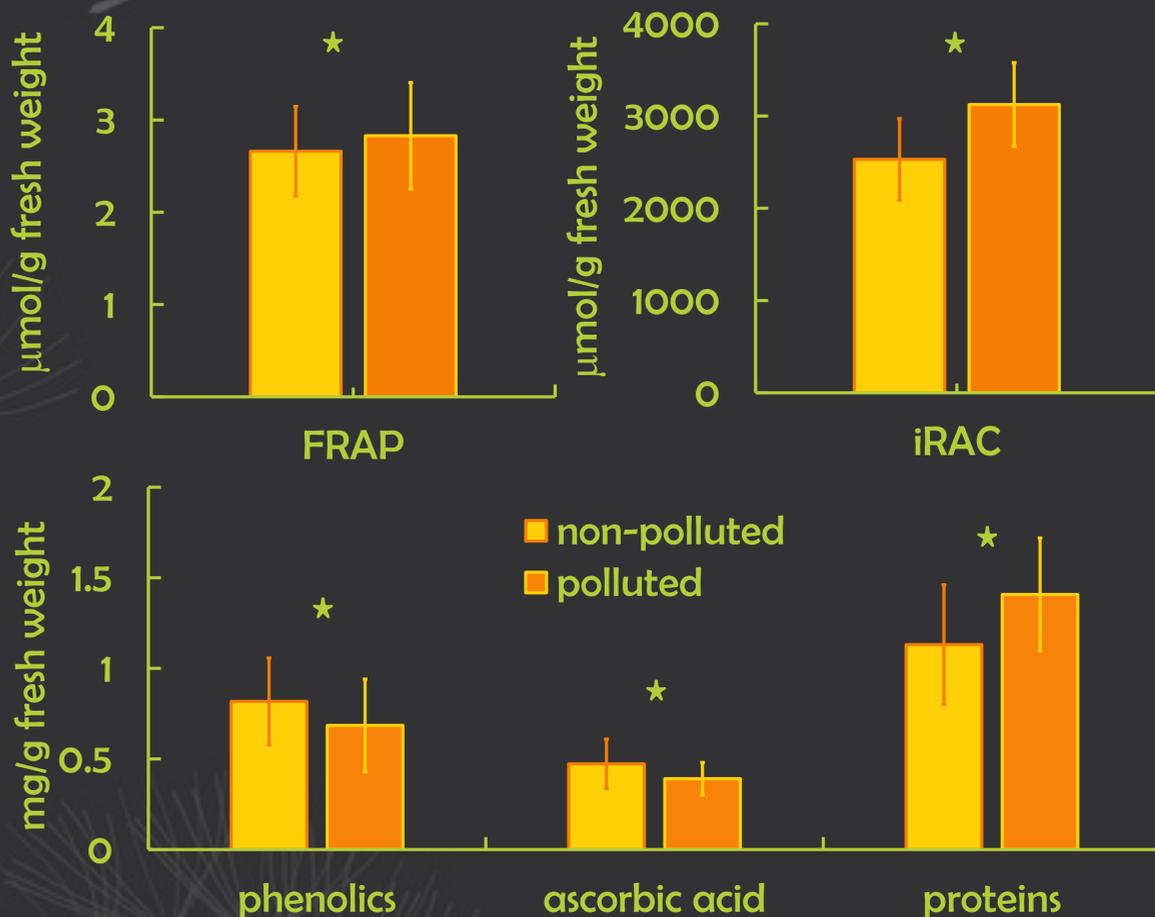

Figure 2 The antioxidative activity (iRAC and FRAP) and content of secondary metabolites (total phenolics, ascorbic acid and total protein concentration) were determined in dandelion leaves collected in polluted and non-polluted rural areas. Data are represented as meand ± SD. Asterisk (*) represents significant difference at $p < 0.05$ (Student`s *t*-test).

CONCLUSION

Our results showed significant increase of antioxidative capacity and total protein concentration in dandelions in polluted areas what was accompanied with decrease of PHE and AA content. This suggested inhibition of secondary metabolites production despite good physiological performance due to high antioxidant capacity of dandelions collected in polluted rural areas.

REFERENCES

Akram et al. Front Plant Sci (**2017**) 8:613; **Borowiak** et al. Ecol Indic (**2018**) 94:22-27; **Bradford** Anal Biochem (**1976**) 72:248-254; **Nejad** et al. J Ornam Hortic (**2020**) 10:27-36; **Rajurkar** et al. Indian J Pharm Sci. (**2011**) 73:146; **Shodehinde** et al. Asian Pac J Trop Bio (**2013**) 10:449-457; **Wan** et al. Beverages (**2018**) 4:58

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