

Influence of the soil traits on some biologically active polyphenolic substances in *Moltkia petraea* (Tratt.) Griseb. (*Boraginaceae*)

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Abstract

The relation between the contents of biologically active phenolic compounds (total polyphenols, TP; tannins, T; total flavonoids, TF; total phenolic acids, TPA) and soil traits in ten *Moltkia petraea* (Tratt.) Griseb. populations, growing in Croatia, Bosnia and Herzegovina, and Montenegro was investigated. The concentration of TP was 3.97–6.61 %, 3.91–6.07 %, and 3.26–5.53 % of dried weight in leaves, flowers, and stems, respectively. The content of TF was 0.37–1.13 %, 0.18–0.52 %, and 0.04–0.31 % in leaves, flowers and stems, while the content of TPA was 1.58–3.43 %, 1.71–3.26 %, and 1.50–2.92 % in the same organs (leaves, flowers, stems). The soil was characterized by very high content of organic matter (4.19–36.26 %) and by high variability in the content of CaCO₃ (from below the limit of quantification to 50.59 %). pH (in 1 M solution of KCl) was 6.59–7.33, while the content of nitrogen was 0.33–0.70 %. The content of P₂O₅ and K₂O was 1.22–11.09 mg per 100 g of soil and 26.61–125.00 mg per 100 g of soil, respectively. The results showed that there was no strong connection between biologically active substances and chemical traits of soil. Negative Spearman Rank Order Correlation was found between phosphorus content in soil on the content of total phenols in leaves and stems, and also on the content of total phenolic acids in flowers ($r_s = -0.81$; -0.81 , and -0.73 , $p < 0.05$, respectively) and also a negative influence of organic matter in soil on the content of total tannins in stems ($r_s = -0.67$, $p < 0.05$). It is possible to conclude that the biosynthesis of phenolic compounds in *Moltkia petraea* was affected more by some other factors (e.g. genetic factors) rather than the soil conditions.

Key words: *Moltkia petraea*, phenolic compounds, soil traits, biologically active substances, plant habitats

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