

Comparative phytochemical analysis of active compounds from *Symphytum officinale* roots and leaves

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Comfrey (*Symphytum officinale*) has been used as a herbal medicine for >2000 years, mostly as a promoter of wound healing, analgesic and anti-inflammatory agent in musculoskeletal problems [1,2]. Although its molecular mechanism of action remains unclear, the efficacy of comfrey remedies has been confirmed in several clinical trials [3]. The aim of the research was to analyze and compare chemical composition of biologically active compounds, especially allantoin and phenolic compounds – simple phenols and flavonoids in comfrey roots and leaves obtained from different sources. Therefore, the TLC-densitometric method of allantoin determination was optimized. The analysis was carried out on TLC Si60 and TLC Si60_{F254} plates with the mobile phase: butanol-50 % methanol 2:1+0.16 mL HCOOH/60 mL of solvents mixture. The determined allantoin content varied from 0.35 to 2.17% in roots and was below the quantification limit in leaves. Moreover, the chemical profiles of analysed samples were compared with HPLC methods. As the result, quantification of phenolic acids was carried out (rosmarinic acid – in range of 0.59-1.84% in roots and 1.91-2.41% in leaves and caffeic acid – respectively 0.11-0.14% and 0.13-0.19%) and new glycosylated flavonoids in comfrey leaves were identified by the HPLC-DAD-MS. Antioxidant activity of both plant materials was compared with spectrophotometric assays (DPPH, ABTS and FRAP) and TLC-bioautography methods (DPPH, XO inhibition, riboflavin-light-NBT).

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References

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