



1st Network Meeting
of UV4Plants,
International Association
for Plant UV Research

abstract book





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Differential dynamics of flavonoid biosynthesis and accumulation in six medicinal herbs under full sunlight exposure

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The dynamics of epidermal flavonoid ($_{ep}Flav$) induction was monitored during 11 days in the leaves of three *Ocimum basilicum* varieties: Americanum, Genovese and Purpurescens, *Salvia officinalis*, *Eruca sativa* and *Verbascum thapsus* previously grown in a glasshouse (receiving 16% of sunlight irradiance without UV). At full sunlight plants received mean daily doses of 6.97 MJ m⁻², 0.86 MJ m⁻² and 22.46 kJ m⁻² in the photosynthetically active radiation, UV-A and UV-B wavelengths, respectively. Although constitutive concentration of $_{ep}Flav$ was similar, dynamics of their induction was species-specific. Significant increase in $_{ep}Flav$ accumulation was observed 30h after exposure to sunlight in all species except *O. basilicum* var. Purpurescens, in which the increase was delayed. This delay was correlated with induction of constitutive epidermal anthocyanins. Total leaf flavonoids were unchanged, in contrast to epidermal, emphasizing their UV-B absorbing function. Total antioxidative capacity increased at least 2-fold under sunlight, which was in accordance with total phenolic increase. Leaf dry biomass was 50-100% higher in sunlight-exposed compared to glasshouse grown plants, while fresh biomass was unchanged, indicative of leaf thickening. We showed that flavonoids accumulation was dependent on light conditions and constitutive pool of UV-B absorbing compounds.

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notes:
