Spectrophotometric determination of the content of photosynthetic pigments in some decorative species grown in *in vitro* and *in vivo* conditions

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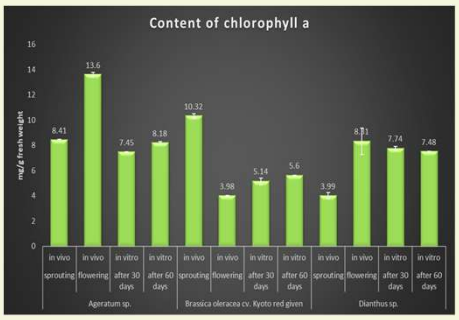
The photosynthetic activity of species ageratum (*Ageratum* sp.), decorative cabbage (*Brassica oleracea* cv. *Kyoto red given*) and carnation (*Dianthus* sp.) was determined by examining of the content of chlorophyll a, chlorophyll b, chlorophyll a+b and carotenoids.

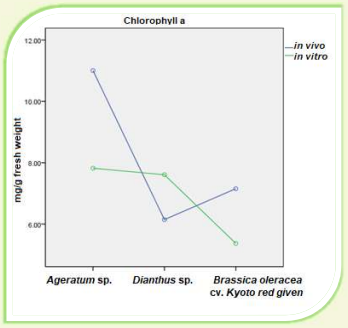
Materials and methods

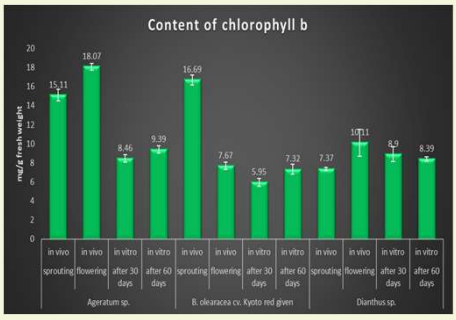
- The content of photosynthetic pigments from *in vivo* conditions was determined in the sprouting and flowering phenophase.
- The pigments from *in vitro* conditions were examined in shoot culture, obtained from meristematic explants, after 30 and 60 days of initial explants placement on MS medium.
- Three leaves were taken from each of the plant species cultivated *in vitro* and *in vivo* conditions.
- The edges were cut off from each leaf and 200 mg fresh weight material was used for extraction of the photosynthetic pigments.
- The photosynthetic pigments extraction was performed with 96% C_2H_5OH with aqueous vacuum filtration pump.
- The absorbance was determined on UV/VIS spectrophotometer JANWAY 6305 at 665 nm for chlorophyll a, 649 nm for chlorophyll b and 470 nm for carotenoids. The content of chlorophyll a+b was mathematically calculated.

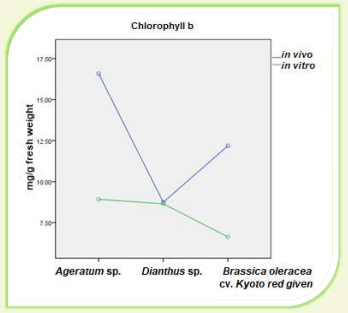
Percentage ratio of the photosynthetic pigments in ageratum, carnation and red decorative cabbage.

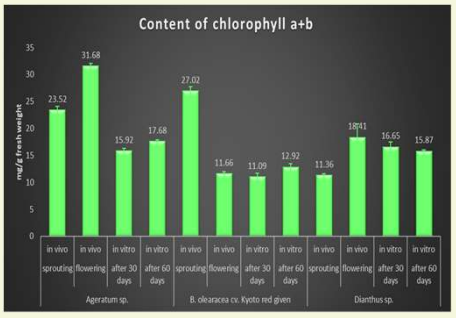
Species	chlorophyll : carotenoids *in vivo* (%)		chlorophyll : carotenoids *in vitro* (%)	
	sprouting phenophase	flowering phenophase	after 30 days	after 60 days
***Ageratum* sp.**	94,44:5,56	96,91:3,09	96,21:3,79	96:4
***Dianthus* sp.**	96,42:3,58	96,34:3,66	96,03:3,97	96,34:3,66
B. oleracea* cv. *Kyoto red given	96,42:3,58	96,15:3,85	95,69:4,31	95,85:4,15

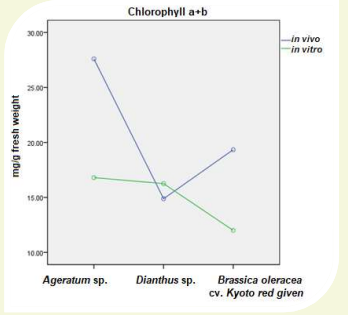


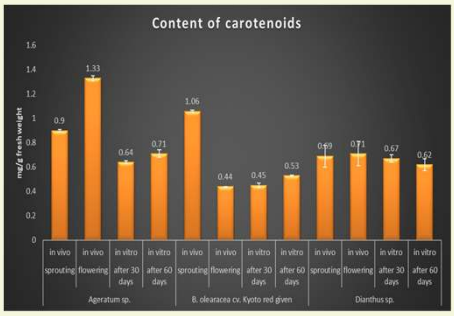


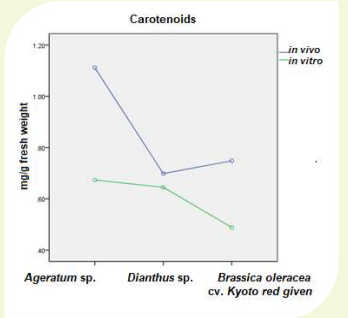












Conclusion remarks

- ✓ The content of photosynthetic pigments is lower in *in vitro* conditions as compared to those in *in vivo* conditions.
- ✓ Generally, in *in vivo* conditions, the content of photosynthetic pigments is higher in the sprouting phenophase.
- ✓ The average content of chlorophyll a showed that carnations from *in vitro* conditions had higher value as compared to carnations from *in vivo* conditions, as an exception from the rule.
- ✓ The content of chlorophyll b in carnation in *in vitro* conditions was almost the same as in *in vivo* conditions.
- ✓ The content of carotenoids in ageratum in *in vivo* conditions was much higher as compared to the *in vitro* conditions.