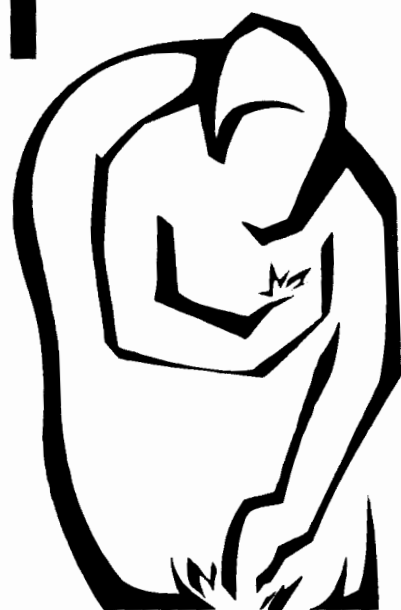


3rd International Symposium on Saffron



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KROKOS, KOZANI, GREECE
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BOOK OF ABSTRACTS



from 11 to 16 days with a frequency of induction of 100% and a percentage of 15% of contamination; for the treatment in liquid the appearance time of free cells was from 10 to 14 days with a frequency of induction of 100% and a contamination percentage of 25%. In the *in vitro* cultivations of daughter corms, both in gel and liquid media, there was no significant difference ($P>0.1$) among the different combinations with auxins, in whose formulae there was always callus, whereas in the case of the media with only kinetin and witnesses there was no response at all. However, there was indeed significant difference ($P<0.045$) between treatments in gel and those of the liquid medium. Additionally, whole daughter corms were planted both in gel and liquid media with the treatment with NAA ($2 \text{ mg} \cdot \text{L}^{-1}$) and Kin ($1 \text{ mg} \cdot \text{L}^{-1}$), where there was also callus and cells in suspension induction.

P1-12. Genetic divergence in saffron (*Crocus sativus* L.). Studies on genetic divergence in saffron (*Crocus sativus* L.) under temperature conditions of Kashmir

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Two hundred genotypes of saffron grown at Lathpora area of Kashmir were evaluated for genetic diversity. Data over years for 19 characters was collected and subjected to Mahalanobis D^2 statistics for study of divergence at genetic level. Three clusters were formed in year 1, two in year 2 and sixteen in pooled over years. Highest inter cluster distance was observed between cluster XV and cluster XVI followed by cluster Vand XVI respectively. The characters viz; fresh stamen weight, plant height, fresh flower weight, pistle length and fresh pistle weight contributed maximum towards divergence. The present investigation therefore proved that variability is present in the saffron population of Kashmir and the elite genotypes can be further used for molecular analysis.

Keywords: *Crocus sativus* L., genetic divergence, variability

P1-13. Survey the effect of irrigation periods on PDS and BCH gene expression with semi quantitative RT-PCR in saffron

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Saffron (*Crocus sativus* L.) is the most valuable and indigenous plant in Iran. But knowledge on the molecular investigations of the saffron is still limited. The importance of this plant is due to red stigmas with color, flavor and medicinal properties. Saffron stigmas contain a lot of carotenoids such as Crocetin and Crocin. Some genes such

as *BCH* and *PDS* have basic roles in carotenoid production. This study carried out due to determination the effect of four irrigation treatments on expression of these genes. Semi quantitative RT-PCR assay has been developed for rapid and semi quantitative detection of mRNA transcripts of these genes. RT-PCR with oligodt and specific primers resulted in amplification of two bands 108bp and 148bp for *BCH* and *PDS* genes, respectively. The results showed that the expression of *BCH* and *PDS* genes didn't have significantly difference in treatments I and II (irrigated twice in different time) and treatment IV (not irrigated). But in treatment III (once irrigation) expression of these genes decreased a little. Difference in expression of these genes was calculated by comparative analysis with internal standard (18s rRNA).

Keywords: gene expression and irrigation, RT-PCR, saffron

P1-14. The establishing of tissue cultures from *Crocus* species originated from the Carpathian Basin and their use in the search for economically important products

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Saffron is prepared from dried, red stigmas of *Crocus sativus* L. and its value is based on the color compounds crocin, crocetin and pleasant aroma, safranal. Saffron has been used as a spice, moreover crude extracts of stigmas and the purified compounds also have been found to have medicinal properties. Among *Crocus* species, tissue cultures have been established mainly from *C. sativus* L. In this species, tissue culturing includes callus cultures and micropropagation. Nowadays, germplasm preservation via tissue cultures of endangered or ecologically important species payed the attention of researchers. Moreover, those species might be important for the production of compounds otherwise well described for *C. sativus* L.: crocin, crocetin, safranal. The aim of this study is to investigate the tissue culture potential of several members of the *Crocus* genus with their natural habitat in the Carpathian Basin. Tissue cultures were successfully established in case of *Crocus heuffelianus* and *Crocus sczepusiensis*. Explants of shoot tip meristem were surface sterilized and placed on Murashige-Skoog basal medium supplemented with 2% (w/v) sucrose, Gamborg's vitamins, 0.8% (w/v) Bacto-agar and the proper auxin/cytokinin concentrations. We could induce the development of embryogenic callus. This is the first report on the establishment of stable callus cultures from these species. Calli of both species were capable to produce somatic embryos. This system is a good starting point for plant regeneration experiments and *in vitro*-producing of *Crocus* plantlets with essential secondary metabolites. The amount of secondary metabolites was determined by capillary electrophoresis. We can conclude that the tissue cultures established are suitable for germplasm preservation with the highest efficiency and plant