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BOOK OF ABSTRACTS

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Content

RESULTS:

It was observed that results for TPC (5.41 mg/g GAE for S1; 7.69 mg/g GAE for S2), HCA (11.98 mg/g GAE for S1; 14.33 mg/g CGAE for S2), TAC (78.86 mg/g AAE for S1; 237.61 mg/g AAE for S2), FRP (16.45 mg/g AAE for S1; 21.64 mg/g AAE for S2) and DPPH" (13.14 mg/g AAE for S1; 14.86 mg/g AAE for S2) were significantly different ($p \leq 0.05$). In all cases *V. album* subsp. album exhibited better bioactivity compared to *V. album* subsp. abietis. However, *V. album* subsp. abietis exhibited higher TFC value (8.27 mg/g QE F.W.) but it was not significantly different The CUPRAC values didn't differ much in two studied subspecies.

CONCLUSIONS:

Obtained results indicate that both mistletoe subspecies are good source of bioactive compounds, in particular, the different phenolic acids. Both subspecies are the excellent antioxidant source. The further research will be focused on deeper phytochemical characterization of different *Viscum* populations and the bioactivity of target extracts and their individual components.

ACNOWLEDGMENT:

This work was supported by bilateral cooperation between Republic of China and Republic of Serbia named "Biological effects of extracts and molecules isolated from plants from the Balkans".

T4-P-15 Application of mutation breeding in creation of climate resilient cereal crops

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KEYWORDS: induced mutations; gamma irradiation; optimal doses; wheat; barley

INTRODUCTION:

In a global climate change scenario crop varieties with increased tolerance to drought, heat and other abiotic stresses are needed. So far, at the Institute of Field and Vegetable Crops many different studies for testing the existing varieties to these stresses were performed, but there was no breeding program for active development of tolerant varieties. Using mutation breeding we will try to develop wheat and barley varieties with incorporated drought and heat tolerance in order to be more adaptive to the changing climate.

OBJECTIVES:

The objectives of this study were to determine the optimal doses of gamma irradiation for mutation induction in two wheat and one barley varieties, and to apply the identified doses in order to produce mutant populations.

METHOD / DESIGN:

Radio-sensitivity test for determination of optimal irradiation doses was carried out according to the FAO/IAEA Manual on Mutation Breeding. Dried seeds of two winter wheat (NS40S and Simonida) and one barley varieties (Rudnik) were exposed to 75, 150, 300, 450 and 600 Gy gamma irradiation. The treated seeds and non-treated control were sown at equal depths in a tray filled with soil in rows (20 seeds each). Per assay three replicates were performed, one tray per replicate. After fourteen days of growing in a greenhouse, the germination and seedling height was measured to determine the Growth Reduction Value 50 or GR50.

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RESULTS:

The results have shown that treated wheat and barley varieties had different reactions to applied doses of gamma irradiation. Germination of both wheat varieties was very good at all applied doses (over 90%), and there was no significant difference in the germination rate among doses or varieties. However, barley seeds were more susceptible to gamma irradiation, where doses of 300, 450 and 600 Gy reduced germination rate for 14.2, 33.2 and 42.1%, respectively. The seedlings' growth was more affected by irradiation treatment then germination process in both wheat and barley varieties. The dose of 300 Gy was lethal for Rudnik and NS-40S, while Simonida expressed higher tolerance regarding this dose. Accordingly, the dose of 210 Gywas identified as GR50 for varieties Rudnik and NS-40S, while 310 Gy was determined for Simonida. These doses were used for the treatment of 2000 seeds of each variety and mutation populations were produced. Further, mutation populations of these cereal crops will be used in a breeding programs for creating the varieties with increase resilience to climate change.

CONCLUSIONS:

Gamma irradiation had negative effect on seed germination and growth in wheat and barley varieties, but the varieties had different reactions to applied doses. The GR50 values were identified for each variety and used for production of mutation populations. The obtained populations will be used in wheat and barley breeding programs for improved tolerance to climate change.

ACKNOWLEDGEMENT:

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T4-P-16 Molecular diversity of autumn garlic genotypes using SSR markers

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KEYWORDS: classification; germplasm collection; microsatellites

INTRODUCTION:

Garlic (*Allium sativum L.*) is one of the most important *Allium* species in terms of worldwide production and various usages in human nutrition, medicine, pharmacy and cosmetics. Basic method of garlic propagation is vegetative and creation of new varieties is mainly achieved by clonal selection. The characterization and preservation of samples in germplasm collections is of crucial importance in plant breeding, as well as availability of information about number and characteristics of samples in gene banks. Since pheotypic traits can vary significantly under the influence of environmental factors the characterization is more reliable by using DNA markers. Effective characterization of samples in collections and identification of duplicates is important from the economic aspect, ie. space saving and maintenance costs. The garlic collection of the Institute of Field and Vegetable Crops in Novi Sad (IFVCNS) includes 63 samples of autumn and 67 samples of spring garlic. These genotypes represent a valuable genetic pool for the selection of clones with appropriate characteristics, highly adapted for the production in the agro-climatic conditions of Serbia. Molecular characterization will provide more complete insight into diversity of samples, identification of potential duplicates and enable breeders more efficient selection and development of new cultivars.

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