IMPROVEMENT OF ANTAGONISTIC POTENTIAL OF TRICHODERMA SPP. BY GAMMA IRRADIATION

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Introduction:
Biological control of plant pathogens has attracted significant recent attention as an alternative disease Management strategy due to its ability to provide environmental friendly disease control, particularly when included in an integrated pest management strategy (Holmes *et al*., 2004; Krauss and Soberanis, 2001). *Trichoderma harzianum* has been identified as a promising bio-control agent of many plant diseases caused by the soil-borne pathogen (Kay and Stewart, 1994). Trichoderma species are known to suppress infection of root by soil-borne pathogens like fungi such as Macrophomina phaseolina, Rhizoctonia solani, Fusarium species on various crops (Ehtesham *et al*., 1990; Benítez *et al*., 2004; Adekunle *et al*., 2001) and root-knot nematodes (Sun and Liu, 2006). The aims of the present study are (i) Production of *T. harzianum* and *T.viride* mutants (by using gamma irradiation) via improvement of antagonistic capability of the Iranian isolates against the pathogenic fungi (*Fusarium solani* , *Rhizoctonia solani* and *Macrophomina phaseolina*), (ii)Improvement of capability of these isolates for tolerance to fungicides in order to determine their compatibility with fungicide applications as part of an integrated disease management programme (iii) Protect the environment and human health from chemical substances hazards by reduce the chemical fungicides at the minimum concentrations with encourage of bio-control agents applications.

Materials and Methods: Fungi were isolated from samples collected from different locations of sugar beet farms. Dilution plate method was used for isolation of fungi. T. harzianum and T.viride isolates (21 isolates from each species) were selected from mutated population (186 isolates) and identified according to their morphological characteristics (mycelia growth rate and spore production ability) as described by Rifai (1969). Acording to the results of the antagonistic activity of Trichoderma wild type isolates, two T.viride &T.harzianum with gamma rays to induce mutations were selected and cultured on *PDA* medium was prepared.To obtain the optimum dose for mutation induction, fungi spore suspension of T.harzianum & T.viride were irradiated at the 0-450Gy,50Gy intervals. Antagonistic capability of *T.harzianum* & *T.viride* isolates against *F.solani*, *R.solani* and *M.phaseolani* were obtained by dual culture test, Antagonistic capability of *Trichoderma sp*. mutants was also determined in the same procedure.

Results and Discussion: Acording to the results of Fig.1 *ThM3, ThM6, ThM15*, have the highest growth inhibition against *F.solani*, also *ThM6, ThM7, ThM2* have the best result on *M.phaseolina* and *ThM8* has acceptable result against *R.solani*. In addition the results of Fig.2 showed *TvM17, TvM19* and *TvM12, TvM11* and *TvM6, TvM13* have the most inhibition activity of growth rates respectively against *F.solani, R.solani* and *M.phaseolani*.

General Conclusion: Our results showed that mutated isolates have statistically more antagonistic capability than its parent and random mutantion induced by gamma radiation have acceptable results in improving the bio-control ability of *Trichoderma* species.

Refrence:

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