



**EFFECT OF MAGNETIC FIELD AND NANO-PARTICLES OF
TITANIUM OXIDE (TiO₂) ON SEED GERMINATION AND EARLY
GROWTH CHARACTERISTICS OF AJOWAN (*AMMI COPTICUM* L.)
IN PREMATURE SENESCENCE**

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High temperature and relative humidity during seed storage make rapid decline in seed germination and quality. Some physical and chemical pre-treatments in these condition, can improve the seed quality and characteristics. Use of magnetic field and pre-treatment of seeds with nano-particles are two treatments which examined in our study to investigate their effects on seed germination and early growth characteristics of Ajowan (*Ammi copticum* L.) in premature senescence condition. An experiment with factorial arrangement based on completely randomized design with 3 replications was conducted in research laboratory of Birjand University in 2012. Seed deterioration was induced by storage in temperature of 40°C and saturation condition for 48 h. The first factor was priming with nano-particles of titanium oxide (TiO₂) at two levels (0 (control) and 200 ppm), the second factor was using of the magnetic field at three levels (50, 100 and 200 mT) and the third factor was the time when seed exposed to magnetic field at three levels (30, 60 and 120 minutes). Two control treatments (without any of the seed treatments and treat just with nano-priming) were considered. Results showed that priming with nano-particles of TiO₂ had significant effect on improving of germination rate, seedling length and seedling fresh weight of Ajowan in deterioration condition. Use of magnetic field could affect seedling fresh weight ($p < 0.05$). Interaction effect magnetic field and nano-priming was significant ($p < 0.01$) on all measured traits. Result indicated that seeds which induced by 50 mT of magnetic field for duration of 120 minutes, had the most seedling length and least electrolyte leakage.

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