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New Detecting of Effect of Magnetic field on Germination, Shoot Growth and Activity of Peroxidase Enzymes Alder in Alder Tree

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ABSTRACT: The effect of changes in Tesla magnetic field of 4 and 8 peroxidase activity, the alder seed germination and growth of root and shoot length were examined. A method that leaves the filter paper for 5 treatments with 4 replicates were a total of 20 container, After 20 days of culture dishes at 10-minute intervals 5 and placed inside a magnetic field given. Counted the number of buds and root and shoot growth rate was measured by a ruler. By extraction of the enzyme extracted using a UV spectrophotometer at 420 nm was performed quantitative studies. Peroxidase activity was measured in units of time Then all data that are the root and stem length in centimeters The number of buds per container and the average number of peroxidase enzyme activity of each sample was recorded in software excel. As a result, all parameters except alder seed germination percentage at 0.05% was significant difference between the treatments.

Keywords: Peroxidase activity, Tesla magnetic, spectrophotometer.

INTRODUCTION

Electricity, magnetism, light and monochromatic noise can affect the growth of plants. This technology called electronic media and can increase the growth rate, yield and its quality. DC and AC, magnetic, radio frequency, and the sound is monochromatic light. The energy from these seeds, plants, soil, water and nutrient transfer (Nelson, RA 1999). However, artificial magnetic fields that human industrial development, the use of advanced materials and new energy sources, such as proliferation and spread they are, the more problems there. Evaluate the effects of electromagnetic fields 15 and 23 mT, 50 Hz for 5 hours on two lichen species were studied during 3 consecutive days. Some physiological and biochemical changes in the activity of this strain were examined and compared to the control .The different periods of 50 Hz resulted in significant differences in the composition of soluble sugars, protein and proline are lichens. (Ghorbanli, 1392).On the other hand, is a secondary consequence of calcium ion flow is cytotoxic. Thus, increased synthesis of cytokinins may be created by the magnetic field. The magnetic field causes the stimulation of cell metabolism and mitosis in plant meristematic cells are (Celik *et al.,* 2008). Treated with increasing magnetic and electrical activity of proteins and enzymes stimulate biochemical processes, the Moon Suk increase germination of tomato seeds (*Licopersicon esculentum* L) in the short-term effect of pre-treatment of seeds with electric and magnetic fields directly observed (Moon, 2000). Magnetic field effect on the surface tension of water and increases water absorption in seeds and the seeds swell in less time than controls (Yoshimas. 2001). The strength of the magnetic treatment, tomato seed germination percentage between 28-8 per cent, which may be due to inhibition of the pest and disease damage (Miqiang *et al,* 2005). The effect of magnetic field on seed wheat was studied in vitro seed impressed magnetic field with different times were 125 and 250 mT. Mean germination time and the time required to obtain 10, 25, 50, 75 and 90% of the seeds was calculated. The germination of seeds that were more affected by the magnetic field of the control seeds or the irradiated seeds about 3 hours longer than the control seed germination needed (Gholami *et al.,* 2010). Magnetic field on seeds that are non-standard conditions have affected and their quality improves (Hamilton-Reeves *et al.,* 2010). The effect of magnetic field on growth and seed production of cucumber were investigated for the work of the AC magnetic field and magnetic field magnitude mT20 DC mT5 radiation was used for 30 minutes. At the end of the AC magnetic field effects repeatedly concluded that the growth rate will be. (Ghasemnejad *et al.,* 2012). The effect of magnetic field on the changes in peroxidase activity of seed germination and the growth of stem and root length, alder and pine tree species in Tehran on 4 and 8 Tesla magnetic fields was studied.

MATERIAL AND METHOD

To prepare the medium for the alder seeds for 5 treatments with 4 replicates considered a total of 20 container stopper bottom of each container and put a filter paper soaked with distilled water to make 100 of alder seeds counted and every dish on filter paper medium. Dishes for 20 days at a time within a specified period of time and the magnetic field in the same container on the put the cover tape is written. At the end of each dish after counting the number of green sprouts, root and shoot growth rate was measured by a ruler. To extract the approximately 4 grams of samples Each of the 40 containers were crushed with a pestle in a Chinese plant was weighed on scales. The solution was extracted with a mixture of 1 to 3, we poured into a test tube and the tube closed with Para film them for 24 hours at 4°C were placed in a refrigerator. Quantitative analysis of peroxides activity by UV spectrophotometer at 420 nm and 1963 Ornstein was performed according to the method of Peroxidase enzyme activity per unit time of one minute for 5 consecutive minutes were measured, and the mean was calculated (Korori, 1989). Then all the data recorded in software excel, and plot the mean of each treatment for each of the four factors discussed above All data is then laid on top of the test LSD 19 SPSS statistical software and Duncan were studied.

RESULTS

A. Calculate the average of the data in the software Excel

The enzymatic activity of each sample in the spectrophotometer software impost in excel and calculate and graph all these factors mean that the data were drawn As follows. Graphs 1 to 4 in effect at the time of exposure to magnetic fields considered in this study demonstrate (Fig. 1,2,3,4).

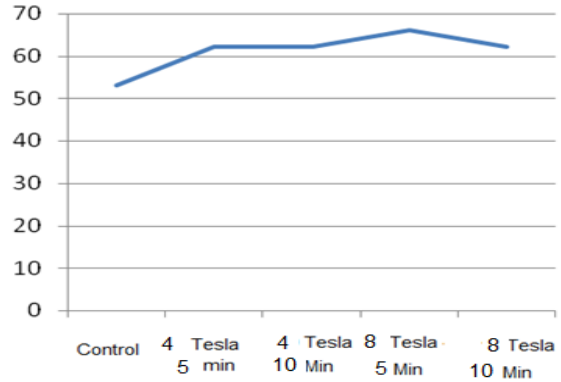

Fig. 1. Germination Alder percentage in control and treatment.

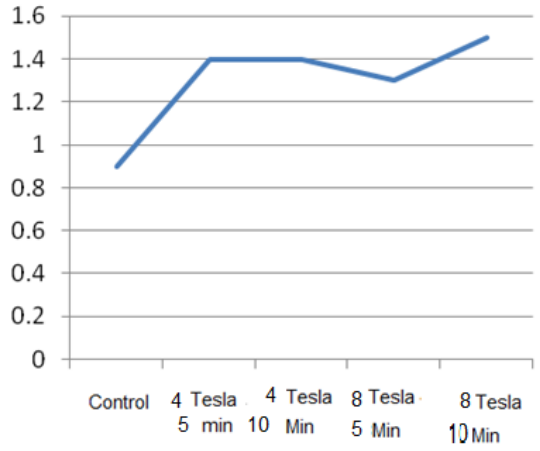

Fig. 2. The mean length of the roots of alder seed (Centimeter).

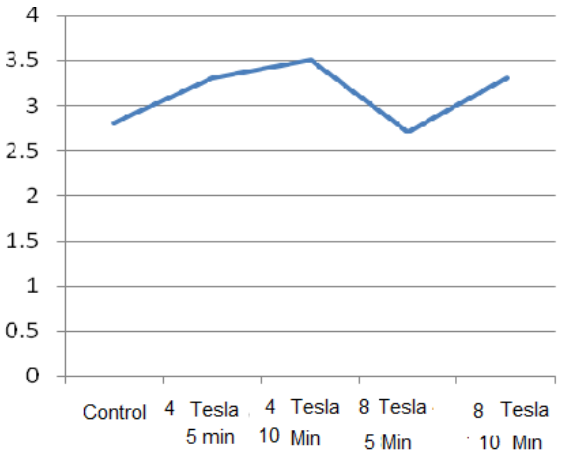

Fig. 3. Average length of alder seed (Centimeter).

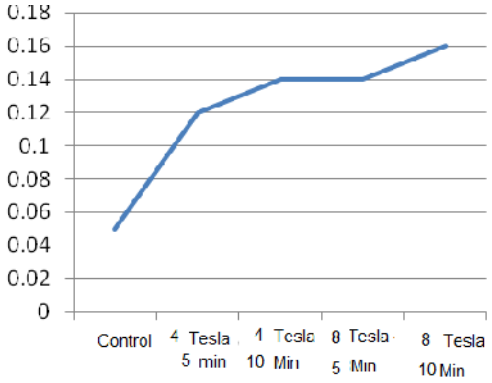

Fig. 4. The average amount of enzyme activity alder tree seedlings (µg/gh).

B. Calculate the value of the significant factors using LSD Test :

All the data in the statistical software SPSS 19 by LSD test was evaluated at 0.05%, which is significant in all four factors, germination, root and shoot length and enzyme activity was measured in centimeters, the results are as follows.LSD test according to the following table for the length of roots and stems and seeds of alder enzymatic activity was significant at 0.05% and the percentage of germination alder not significant at 0.05 percent (Table 1).

Table 1: Calculate the significance level of the test alder seed.

Factor alder review	**F**	**Sig**
Germination	**1.077**	**0.402**
Length Stem	**15.638**	**0.000**
Root length	**8.534**	**0.001**
Enzymatic activity	**5.007**	**0.009**

C. Calculate the value of the significant factors by Duncan test software Spss 19

The test to show significant between treatments Software SPSS 19 different Duncan test at 0.05%. Used to be a significant factor in all four germination, root length and shoot length in centimeters and enzyme activity by the color bar chart is shown below.

It should be noted that the numbers have the same color Each column are statistically according to Duncan's multiple range five percent difference was not significant.

According to Duncan test for percent germination alder between all treatments were not significant differences in the level of 0.05% (Fig. 5). According to Duncan for stem length (cm) between the control and the treatment alder 8 Tesla in 5 Minutes with other treatments were significantly different at the 0.05% level (Fig. 6). According to Duncan for root length (cm) between control alder treatments with other treatments were significantly different at 0.05% (Fig. 7).

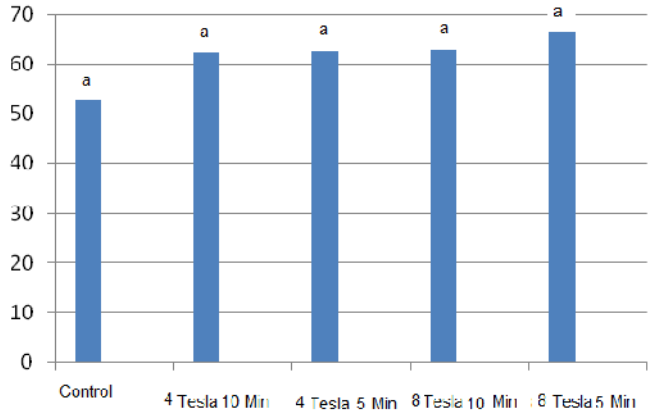

Fig. 5. Duncan diagram for percent germination.

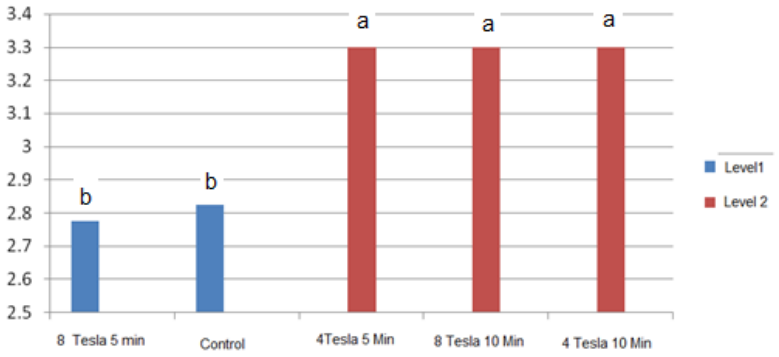

Fig. 6. Duncan diagram for stem length (cm) in the treatment of alder.

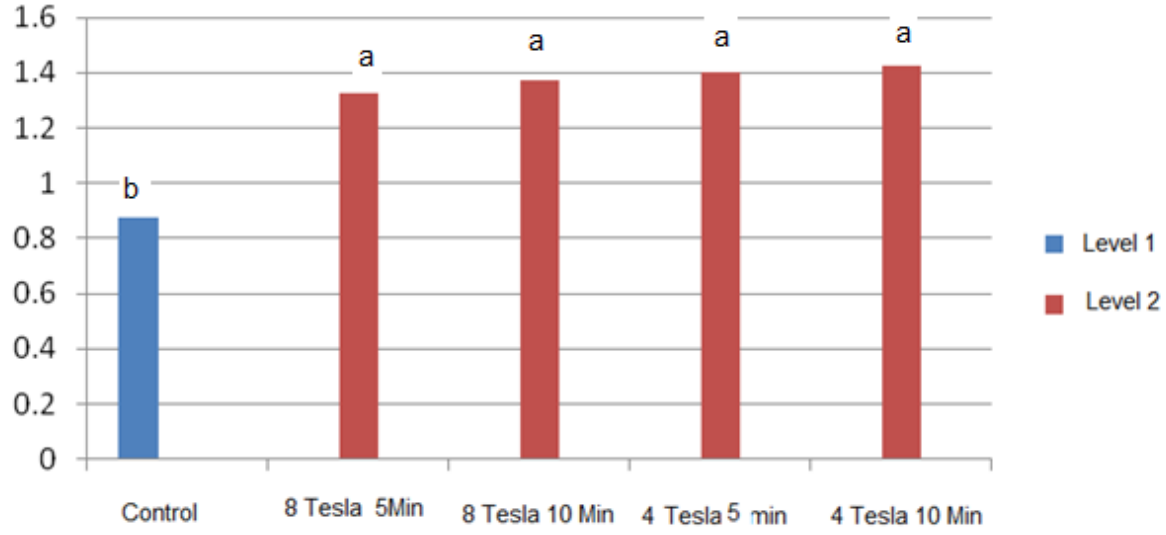

Fig. 7. Duncan diagram for root length (cm) in the treatment of alder.

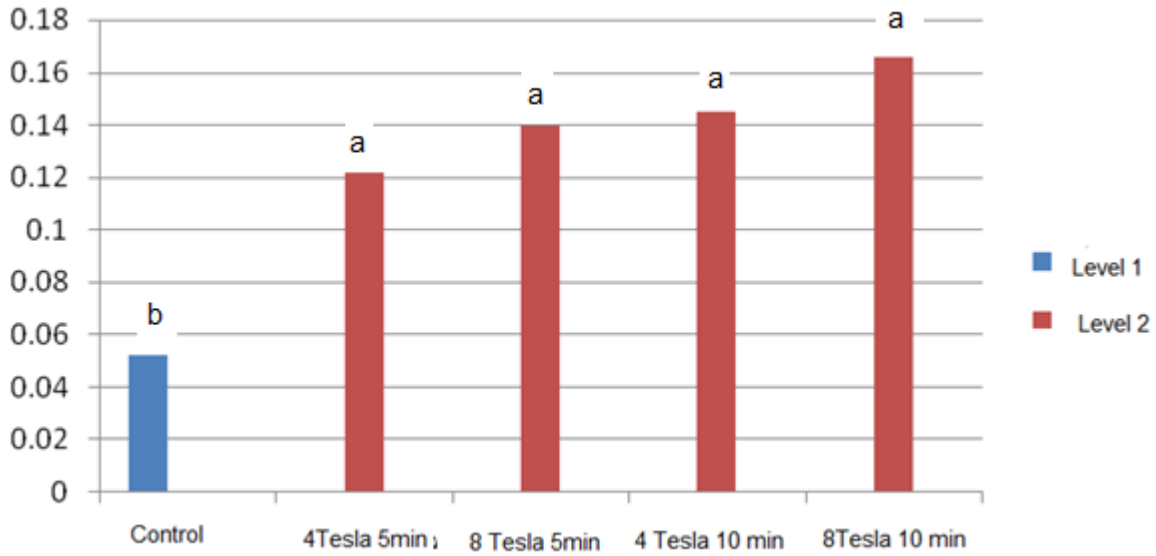

Fig. 8. Duncan diagram for enzymatic activity in the treatment of alder.

According to Duncan test for enzyme activity between control alder treatments with other treatments were significantly different at 0.05% (Fig. 8).

DISCUSSION

It seems that the magnetic field influence on the content of a living cell. Since plant growth under different environmental factors such as temperature, Moisture, oxygen level, and so is the amount of light that each pixel within such materials affect the magnetic field of the factors that affect the organs alive. Magnetic field effect on the surface tension of water and increases water absorption in seeds and seeds in less time than the inflated. The research was conducted on fennel seed germination results showed that the intensity of the magnetic field was not affected by the different treatments. According to Duncan test for germination treatments, there was no difference in the level of 0.05%. But the growth of root length (cm) of alder treatments between all treatments at 0.05%, with no significant difference was observed in control. The research was conducted on fennel seed, the results showed that the rate of growth during the shoot fennel had an effect also appears to be more activity hydrolytic enzymes responsible radically improved characteristics in seeds treated with magnetic is field.

According to Duncan for stem length (cm) of pine tree among all treatments, there was no significant difference in the level of 0.05%. But in alder treatments between control and 8 Tesla in 5 minutes with the other treatments were significantly different at the 0.05% level. It is probable that the magnetic field effect on enzyme activity and protein synthesis, causing deformation of the proteins. It seems that the effect of the change in the nucleic acid sequence that codes for proteins occurs manufacturer (Brockchaston, 1999; Noriyuki,1999). According to Duncan test for enzyme activity in pine treatments with 4 to 8 Tesla Tesla was a significant difference in the level of 0.05%. While the group treated with 5 minutes of 4 to 8 Tesla Tesla is significant at 5 and 10 minutes. The enzyme activities in the control treatments alder with other treatments were significantly different at the 0.05% level. Because the mechanism of magnetic field on the properties of the plant is still not well understood, so their reaction to the severity, duration of exposure, depending on the species and seed, and given that most of the factors that control the rest of the differences.

SUGGESTION

1. Similar experiments done on other plants, and the sensitivity and response of plants to be examined.
2 After determining the magnetic field strength for each plant, using magnetic fields in various media such as transplanting box, and even block planting pots in the greenhouse, we study the performance of the plant.

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