Effect of aqueous leaf extracts and powder of Eucalyptus Spp tree on the germination seeds of barley *(Hordeum vulgare.L)*

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Abstract

The Experiment was performed to study the effect of leaf *Eucalyptus* spp on germination and growth of the barley (*Hordeum vulgare* .L) were studied in aqueous extract and powder dry leaves is evident from this study that crude aqueous extract from the leaves of *Eucalyptus* spp inhibits germination of seeds And that increased concentration of aqueous extract reduces germination and growth, in addition to the splitting of the aqueous extract of crude to the group of components and test their impact on barley seeds has resulted in inhibition of growth in full (of water and 1 of water 2), As for the dynamic testing of powder Leaf of *Eucalyptus* spp it is through the results we note that the rate of germination was good that the witness, amounting to 81.48%, while we did not notice any manifestations of germination in all other transactions ((30%, 20%, 10%) indicated this could Shi indicated the presence of inhibitors in the leaves Eucalyptus sp that have affected the Seed germination and prevented them from germinating.

Kay word*:* *Eucalyptus* Spp. Barley. Aqueous extract. Powder leaf.

Introduction

Plants live in association in groups depending upon the ecological requirements they have generally the same structural and morphological adaptations. Whenever two or more plants occupy the same niche in nature, they compete with each other for various life support requirements(5)Residues exudates and leachates of many plant have been reported to effect the growth of the other plants, a wide range of injurious effect on crop growth has been reported as being due to phytotoxic decomposing products, release from leaves, stem, roots, fruit and seeds(2)reported that plant produce chemicals which interfere with other plants and affect seed germination and seedling growth...

Chemically allelochemcial compounds have open chain molecular structures. These are secondary metabolites that have role in plant-plant, plant-soil, plant disease, plant-insect and plant predator interactions that may be beneficial or detrimental to plant (15,16). The chemicals have harmful effects on the crop in the eco-system resulting in the reduction and delaying of germination, mortality of seedlings and reduction in growth and yield (12,8). Allelopathic chemicals secreted by some plants are natural compounds that have shown far-reaching effects on the growth and development of plants even at low concentration (3).

Antagonistic inhibition is inhibition of complex consists of the interaction of different types of chemicals such as phenols and flavonoids group and Alterpinedat alkaloids and Alcetredat acid, carbohydrates and honest and mixing different groups sometimes be antagonistic effect is stronger than the effect single for each group (10).

Eucalyptus belongs to the family Myraceae, mostly found in tropical region is a native to Australia. *Eucalyptus* spp. grow under a wide range climatic and edaphic conditions in their natural habitats (7). In Pakistan, the Forest Department of Punjab in 1903 raised a small nursery of *Eucalyptus globulus* (13) but the interest shown in the genus during the last two decades has

been considered and a lot of efforts towards its propagation have been made. This species has a high potential of allelochemicals and also essential oils.(9) found 16 components in essential oil of *E. camaldulensis* L., out of which five compounds (α -pinene, 3Δ -carene, β -phellandrene, 1-8 cineole and p-cymene) were identified. The research carried out in India and Pakistan evidently pointed out about the inhibitory or stimulatory effects of this species on the germination and seedling growth of some crops.

Material and method

Experiment was conducted laboratory section crops, Faculty of Agriculture Tripoli University for the academic year the spring of 2009 -2010 where collected papers of *Eucalyptus* spp mature trees developing Research Station, Faculty of Agriculture, took the weight of 100 grams of leaves and then washed securities tap water to remove dust and then washed three times with distilled water, and then cut into small pieces and placed These papers in the flask of one liter capacity containing 500 ml distilled water and placed on a shaker for 24 hours after the nomination and the transfer of aqueous extract of the storage bottle and save it in the freezer until testing.

1.1-Bioassay of aqueous extracts

of the aqueous extract was attended by the center 20% of five concentrations (0.5, 10, 15 and 20%), respectively. Sterilized glass Petri dishes and germination paper and distilled water oven at a temperature of 121 degrees Celsius for three hours, and then sterilized seeds of barley germination rate was 96-98% in the solution of surface sterilization (10% sodium hypochlorite) for 10 minutes followed by washing three times with distilled water previously sterilized and placed 10 seeds in each dish and then incubated in the lab at room temperature.

Extraction and separation of natural ingredients:

Make extraction and separation of natural ingredients of the aqueous extract of the Centre 20% (200 g / L) according to the method used in previous studies (11.3) and by adjusting the pH of aqueous extracts at 7.7 using 0.1 M sodium bicarbonate (NaHCO3) (3) and the transfer of extract to suppress chapter, which contains 25 ml of ether And conducted separate components of natural frequency extraction 8 times by adding 25 ml of the ether at a time, collected extracts organic (organic 1), and seized the pH of the aqueous extract at 2 by adding 6.0 ml of hydrochloric acid (HCl) and held separate components by adding 25 ml of diethyl ether, re-extraction as above, the transfer of aqueous extract (Water 1) to a bottle storage, and the parts ended remainder were collected and added to 40 ml of 0.1 M solution of sodium bicarbonate and conducted extraction repeated addition the solution alkaline 8 times and the transfer of parts of the organic 2 to bottle storage, add hydrochloric acid to adjust pH of aqueous extracts to 2 separated components using 40 ml Repeated extraction with 6 times as mentioned above extracts (aqueous 2, Organic 3) of the Suppression of the classroom, the transfer of 2 for a bottle of water storage were separated ether extracts 1,2,3-ended by evaporation

Bioassay of organic extracts and water:

Adjust the volume of extracts organic (Organic 1, Organic 2, Organic 3) to 100 ml by adding distilled water and sterilized seeds of barley and put all 10 seeds in a dish contains a paper germination, was added to 8 ml of transactions standard (water 1, water 2, Organic 1, Organic 2 Organic 3) for each dish and placed in the room temperature used complete randomized design with three replications Calculated the proportion of germination in each dish and seedling length measured after 10 days of incubation and conducted analysis of variance and Duncan test was used for the averages at the level of probability of 5%.>

Bioassay of Eucalyptus leaf powder.

Experiment was carried out research station, Faculty of Agriculture at the University of Tripoli University in the spring of 2009 -2010 , where of Eucalyptus spp mature leaves collected from trees in developing plant leaves washed tap water to remove dust and then washed three times with distilled water, dried Samples in the dryer on a 68 degree C^0 for two days and then milled, taking 550 grams of flour securities where experiment was conducted on the basis of mixing flour surface layer to the cultivation of seeds in the soil where the seeds were planted in pots the size of 10 cm where the transactions were as follows (0% 10%, 20%, 30%) where it worked for 9 replicates for each treatment was planting 4 seeds in each replicate, and Put inside the greenhouse and left for 15 days were followed up in terms of irrigation regularly day after day and then mixing the powder leaves with the sand the surface layer depth of 1 cm, Used the complete randomized design with nine replications and calculated the percentage of germination in each pot and measured the length of seedling after 15 days of Agriculture and conducted analysis of variance and Duncan test was used to average at 5% probability.

Results and discussion

Bioassay of aqueous extracts

From the results obtained we note that it happened germination of barley seeds after two days of incubation in water extracts from the leaves of Eucalyptus spp The percentage of germination and seedling length in pilot plants vary according to concentration of extracts in the germination of barley seeds After 10 days of incubation **Table (1)** There was a decrease in the percentage of seed germination morally in the nursery at concentrations of 10, 15 and 20% compared with the treatment of the witness containing distilled water, and when comparing the different concentrations found that the germination percentage decreased as a greater concentration of extract as well as the length of the seedling influenced by high concentration following table illustrates this

Table (1) Effect of different concentrations of the extracts Eucalyptus spp average germination rate and the Average length of seedling of the barley plant *Hordeum vulgare*

Average length of seedling (cm)	an average germination (%)	Concentration of extract
a 9.34	a 77.5	0.0
a 8.84	b 47.5	% 5
b7.87	c 15	%10
b 6.76	c12.5	% 15
c 3.20	c 5	%20

Averages in each column and joint identical letters do not differ significantly at the level of significant 5%, according to Duncan test

Bioassay of organic extracts and water:

The data in **Table (2)** Results Effect of organic and aqueous plant Eucalyptus spp in seed germination of barley and length of seedlings was the disappearance of germination final in aqueous extracts and this leads us to believe that a large group of inhibitory substance present in the aqueous extract was damped germination fully The Abstract organic (organic1, organic 2) reduced seed germination and seedling length significantly compared to the treatment of the witness.

Table (2) the impact of organic and water extracts of leaves EUCALYPTUS spp on the percentage germination and seedling length of the barley plant *Hordeum vulgare*

Concentration of extract	Average germination (%)	The average length of seedling (cm)
Control	a 80	a 8.67
Organic1	b 40	a6.43
Organic2	b53.3	a8.41
Organic3	b43.4	a 7.14
Water1	C 0	C 0
Water 2	C 0	C 0

Averages in each column and joint identical letters do not differ significantly at the level of significant 5%, according to Duncan test

BioTesting for leaf powde of Eucalyptus spp.

Through the results **table (3)** note that the percentage of germination was in good witness, amounting to 81.48%, while we did not notice any manifestations of germination in all other transactions (10%, 20%, 30%) This indicates something is indicated by the presence of inhibitors in the leaf Eucalyptus spp that affected the germination of seeds and prevented them from germinating and this gets Baker, H.G. (3) where he said leaf extract Eucalyptus spp affected root growth and the length of seedling in option

Table (3) the impact of leaf powder of Eucalyptus spp on the percentage germination and seedling length of the plant barley Hordeum vulgare

Seedling average weight (mg)	The average length of seedling (cm)	Average germination (%)	Concentration of extract
a126.36	a 17.16	a 81.48	Control
b 0	b 0	0	10%
b 0	b 0	0	20%
b 0	b 0	0	30%

Averages in each column and joint identical letters do not differ significantly at the level of significant 5%, according to Duncan test

The result generated from this study is suggestive that the Leaved of Eucalyptus spp spawned some compounds and materials that inhibit the germination and growth of seeds.

Figure (1) shows the influence of leaf meal EUCALYPTUS SPP dry on the germination of seeds of barley *Hordeum vulgare*

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