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Document Title : *Allelopathic potential of Artemisia sieberi (Besser) on germination and growth of some plants*
القدرة الأليوباثية للشبيح على إنبات ونمو بعض النباتات

Document Language : Arabic

Abstract : Many wild plants release some toxic chemicals which suppress the growth of other plants, this phenomenon is called allelopathy. The study was conducted to assess the allelopathic effects of *Artemisia sieberi* (Besser) plant which naturally grow in different areas of Saudi Arabia on germination, growth and some physiological activities of *Triticum aestivum* L. (monocotyledons), *Cicer arietinum* L. (dicotyledons) as a crop plants and *Sorghum sudanense* (Piper) as a weed plant. Results of *A. sieberi* extract effects showed strong inhibition on germination percentages and a great reduction in radicle, plumule length and number of lateral roots development as well as change in root color. These effects were more clear in dicotyledons plants while roots effected more in *S. sudanense*. Treatments with different concentrations of *A. sieberi* aqueous extracts caused gradual reduction in growth parameters (shoot length, fresh, dry weight and tolerance index) especially in dicotyledons plant, while shoot length was more reduced in weed plant as compared to crop plants. Results showed no significant effects of aqueous extracts on water content of all tested plants. Pigments content was reduced in crops than weeds (Chl.a) and in monocotyledons plants than dicotyledons plants (Chl.a and carotenoids) while total carbohydrates and proline were accumulated. Proline accumulated significantly in weed than in crop plants. Also potassium and magnesium were reduced while sodium and manganese accumulated in the studied plants, except magnesium accumulated and manganese reduced in *S. sudanense*, while calcium concentration increased in *C. arietinum* plant than the other two species. Treatments with shoot residue (mixed with soil) of *A. sieberi*, caused significant gradual reduction in shoot length of weed plants while fresh, dry weight and tolerance index of crop plants were affected significantly than weed plants. There was no significant effect on the water content. Random effects were observed in pigment contents for treated plants with shoot residue, accumulated in crop plants and decreased in weeds. Also, total carbohydrates accumulation were more in crops plants with increasing residue while proline accumulated significantly in weed plants. Results recorded a reduction in most mineral elements (calcium, potassium, sodium and magnesium) for all tested plants except magnesium which did not affected in weed plants, while manganese was accumulated in crop plants and reduced in weed plants. The result of this study is an evidence of allelopathic potential of *A. sieberi* so that it can be used in biological control as natural herbicides to reduce the risk of manufacture herbicides.

Supervisor : د.حسن سعيد الزهراني

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