



**The effect of water stress and magnetic water in the production of trigonelline in callus of Fenugreek (*Trigonellafoenumgraecum* L.) plant**

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**Abstract** : This study aimed to study the effect of water stress by using of deferent concentrations of PEG (poly ethylene glycol) which include (0,3,6,9 %) and the effect of combination between magnetic water (0%PEG+1000G, 3% PEG +1000G, 6% PEG +1000G, 9% PEG +1000G) to induce the production ofTrigonelline in callus of( *Trigonellafoenumgraecum* L.) .Callus induced in vitro on MS medium by using different concentrations of 2,4-D ( 0.5, 1, 1.5 mg/l) and different concentrations of BA ( 0.5, 1, 1.5 mg/l). The results showed that the combination of (1mg/L BA + 1mg/L 2,4-D) was the best combination to produce the highest callus fresh weight compared with other treatments. Methanol was used to extract of Trigonelline from callus under stresses mentioned above. High performance liquid chromatography (HPLC) technique was used to determination quantity and quality of Trigonelline in methanolic extract of callus. Where it was noted by the results of HPLC that the concentration of Trigonelline was increased with increase of PEG concentration and the highest amount of Trigonelline was in (9%PEG). And where it was noted increasing of Trigonelline concentration with increasing concentration of a combination between PEG and magnetic water and the highest amount of Trigonelline was in a combination of (9% PEG +1000G) and it differed significantly compared with the control treatment and other treatments.

**Keywords:**Callus, *Trigonellafoenumgraecum* L., Water stress, Magnetic water, Plant tissue culture, Trigonelline, HPLC.