

## Ultrasonic Waves Induce Callus Induction and Plant Regeneration of the Medicinal Plant Senna (*Cassia acutifolia*)

Karam T. Aziz Al-obaedi<sup>1</sup>, Shifa M. Salih<sup>2,\*</sup>

<sup>1</sup>General Directorate of Education in Nineveh Governorate

<sup>2</sup>Department of Biology, College of Education for Pure Sciences, University of Mosul, Mosul, Iraq

\*Corresponding author

### ABSTRACT

Senna (*Cassia acutifolia*) is a medicinal plant belongs to Fabaceae family. It is considerably used in folk medicine as a purgative. In addition, it has antimicrobial, antioxidant and anticancer activities. 30-day-old seedlings were used as a source of explant. different explants were cultured on solidified Murashige and Skoog (MS) medium containing different concentrations of growth regulators. All parts showed a good response to callus induction, and the best medium was MS containing 2.0 mg.L<sup>-1</sup> 2,4-dichlorophenoxy acetic acid (2,4-D) and 0.5 mg. L<sup>-1</sup> benzyl adenine (BA). On the other hand, ultrasonic waves (47.6 kHz) at different exposure periods were applied. It was clear that 45 minutes exposure period was the best treatment for hypocotyls as the fresh weight reached 5.24g as compared to 40.2g for the control. Whereas a 35 minutes exposure time was very suitable for stems as the fresh weight was 4.87g. This study highlights on the other, the efficient and stimulative effect of ultrasonic waves at 35 and 5 minutes exposure period in enhancing the ability of shoot tips and stem callus for shoot regeneration, as it reached 160% and 130% respectively. The results of the study provide the possibility for utilizing plant tissue culture technique, to produce the active compounds of this important plant sustainably.

