A PRELIMINARY STUDY OF THE IMPACT OF ULTRASONIC WAVES AGAINST THE PERCENTAGE OF FORMALDEHYDE WHICH CONTAINED IN VEGETABLES WITH ANALYSIS OF SPECTROMETRY METHOD

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Abstract
An investigation into the impact of ultrasonic waves against the percentage of formaldehyde in vegetables has been done using a spectrometry method with the spectrometer UV-VIS HR 4000 (ocean optics). This method can be applied to determine a calibration graph of absorbance values of the sample liquid which contained formaldehyde.

In this study, the samples have been irradiated with two methods namely one-sided and two-sided. The samples which is formed spherical with a diameter of 1 cm were extracted to get values of its absorbance (absorbance of non-formaldehyde samples). The samples were immersed in a 37% formaldehyde solution for ten minutes, then they were extracted and measured to get values of its absorbance (absorbance of the formaldehyde samples). The samples were immersed in a 37% formaldehyde, after that they were irradiated with ultrasonic waves at a frequency of 20, 30, and 40 kHz. The irradiated samples were extracted and measured using the spectrometer UV-VIS to get values of its absorbance. The highest reduction of formaldehyde samples was at 22.97% for the two-sided and 14.93% for the one-sided occurs when the spinach samples were irradiated with ultrasonic waves at a frequency of 40 kHz for ten minutes. The results showed that ultrasonic wave able to reduce the percentage of formaldehyde in vegetables.

Keywords : formaldehyde, ultrasonic waves, frequency, absorbance, spectrometry.