

Effect of Solvent Type and Extraction Time on Yield and Purity of Lotus (*Nelumbo nucifera*) Leaf Wax

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This study was conducted with the main objective of extracting lotus leaf wax using a simple methodology and to analyze the wax yield and purity of the extracted wax corresponding to different time treatments. Past studies have found that lotus plant leaf wax contains a mixture of aliphatic compounds mainly nonacosanol and nonacosanediols. Fresh, cleaned lotus leaves with 1 cm² in surface area were exposed to three organic solvents (methanol, acetone and chloroform) and time taken for the presence of light green colour (due to the extraction of chlorophyll) in the medium was recorded to find out the most efficient organic solvent. Further, contact angle measurements of water drops placed on each of the leaf samples treated with different solvents were calculated to find out the efficiency of wax extraction. Based on the results obtained from this study leaf samples with surface area of 72.41 cm² were exposed to chloroform by changing the dipping time duration ranging from two seconds to 30 minutes with time intervals of two seconds for the first five treatments, 15 seconds for the next three and five minutes for the last seven treatments. Extracted wax was subjected to the FTIR analysis to find out the purity of the wax. According to the results it was revealed that green colour was appeared in methanol within the first five minutes and there was no color change in the chloroform and acetone for about 30 minutes. Moreover, least change of the contact angle was shown by the leaf sample which was treated with acetone and it reveals that wax extraction was not done in an efficient manner. Chloroform is the best solvent to extract lotus leaf wax among three organic solvents used. The highest mean yield gives out by the time treatment with the dipping time of 20 minutes. And it shows that the purity decreases with the increase of the dipping time duration.

Keywords: Lotus leaf, Wax, Extraction, FTIR