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3.7 Identification and Characterization of Plant Growth Regulators Present in Coconut (*Cocos Nucifera*) Water Using HPLC (High Performance Liquid Chromatography).

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ABSTRACT

Coconut water (CW) contains a variety of plant growth regulators like indole acetic acid (IAA), gibberellic acid (GA) and kinetin. In the present study attempts have been made to isolate plant growth regulators from CW.

The CW (2.0 L) was initially set to pH 2.5 with 1.0 M HCl and extracted with ethyl acetate (200 ml × 5). The pH of the aqueous layer was adjusted to 7.0 with 1.0 M NaOH and same extraction procedure was followed . The ethyl acetate layer was concentrated under vacuum pressure at 40 ^{o}C and dissolved in 1.0 mL of methanol. TLC was done to separate IAA, GA and kinetin in the CW extract. The hormones were identified on TLC with the corresponding Rf values after comparing with the authentic compounds. The identified bands on the TLC were scraped and redissolved in 1.0 mL of methanol and filtered through 0.45 μm filter, 10 μL was injected into a reverse phase HPLC column. Retention times for peaks were compared with those of authentic standards.

Based on the HPLC analysis, CW contains about 0.088 mg L^{-1} of IAA, 0.076 mg L^{-1} of GA and 0.044 mg L^{-1} of kinetin. In the current method it was possible to extract IAA with 80% recovery (0.07 mg L^{-1}), GA with 70% recovery (0.053 mg L^{-1}) and kinetin with 75% recovery (0.059 mg L^{-1}) from the CW. It can be confirmed that the plant growth regulators present in CW can be effectively extracted, identified and characterized using the current method.