

Authentication of Isolated Hydroxychavicol From *P. Betle* Linn. Leaves Using Nuclear Magnetic Resonance Spectroscopy

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Introduction: Nuclear magnetic resonance (NMR) spectroscopy is an analytical chemistry technique used for the chemical structural determination. This valuable tool is used to study nuclei, commonly hydrogen (^1H) and carbon (^{13}C). NMR provides information about the number of atoms of the studied nuclei that are magnetically separated as well as the nature of the environment of the nuclei.

Aims: In this study, NMR is used to identify the isolated hydroxychavicol. The isolated hydroxychavicol was dissolved in deuterated methanol.

Methods: The sample is analyzed for 1D NMR (^1H and ^{13}C) spectra using 500 MHz NMR (Bruker; Avance III Ultrashield Plus; Switzerland) located in Universiti Malaysia Pahang. The target directed isolation of hydroxychavicol was performed by comparing bioautographic profile of hydroxychavicol-rich fraction to that of hydroxychavicol standard. Hydroxychavicol is a known compound with molecular formula of $\text{C}_9\text{H}_{10}\text{O}_2$ and molecular weight of 150.174 g/mol.

Results and discussion: ^1H and ^{13}C NMR elucidated the structure of the isolated hydroxychavicol. The ^1H NMR spectrum furnished 10 protons at chemical shifts of δ_{H} 3.21, 4.90, 4.98, 5.9, 6.49, 6.61, and 6.67 ppm. Based on the spectrum, a broad spectrum was displayed meaning there is a hydroxyl group in the structure. The ^{13}C NMR spectrum displayed the nine carbons at chemical shifts δ_{C} 40.64, 115.33, 116.31, 116.76, 120.87, 132.99, 139.57, 144.46, and 146.17 ppm.

Conclusion: The isolated hydroxychavicol was successfully being authenticated by NMR.

