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Structural Elucidation of Organic Natural Products By 1D, 2D and Multidimensional-NMR, Spectroscopy

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Abstract

Nuclear magnetic resonance spectroscopy is the most important technique used in the process of structure elucidation of organic natural products. NMR spectroscopy makes use of three approaches; those are one dimension (1D-NMR), two dimensions (2D-NMR) and three dimensions (3D-NMR). The first approach of 1D-NMR.The 1H and13C, NMR spectra are the first tool used by chemists to perform the structure elucidation of their products on a routine basis. Also, DEPT, 31P, 15N,19F, etc., generates good information about the structure of simple organic compounds, but in case of larger molecules the 1D-NMR spectra are generally overcrowded. Hence, the second approach of 2D-NMR (COSY, HETCOR, HSQC, HMBC, TOCSY, NOESY, etc.), used for large molecules like proteins. The Multidimensional-NMR, opening new windows for studying the protein folding problem. The basis of the determination of the three-dimensional structure of biomolecules (proteins, DNA, RNA) , by providing the resolution necessary to analyse their complex spectra. The aim of this study is to highlight of the recent advances in the application of NMR-techniques as structure elucidation tools to actual challenges in the field of organic natural products.This study is supported by interpretation of structure of different organic compounds by different NMR techniques.

Biography

Sahar.A.M. Hussein is Professor of natural product chemistry since 2004, She was the head of Phytochemistry and plant systematic department NRC. She was the head of NMR department at King Saud University, Riyadh Saudi Arabia. She joined DFG project. She was Co-principle investigator of Scientific Research Agreement BMBF, Germany . She was Co-principle investigator of STDF/DAAD-GESP. She focus in isolation, purification and identification of natural compounds from medicinal plants,using advanced techniques (1D and 2D NMR analysis), She is an editor of the Egyptian Journal of Chemistry and Open Medicinal Chemistry Journal. She awarded higher h-index 17 at NRC, she awarded scientific excellence at NRC. She has contributed 54 publications, having citations 1,231 with h-index 18.

Publications

1. Phenolic content as antioxidant and antimicrobial activities of Pistacia atlantica Desf. (Anacardiaceae) extract from Libya
2. Chemical composition and biological activities of red beetroot (Beta Vulgaris Linnaeus) roots.
3. Reno-protective effect of methanolic extract of Stevia rebaudiana Bertoni and bioactive phenolic compounds in type-1-diabetes.
4. Cytotoxicity and anti-microbial activity of aqueous methanolic extract of Zingiber officinale Roscoe (Zingiberacae)
5. Cytotoxic activity of bioactive compound from Caesalpinia ferrea Martius, Fabaceae

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