STEREOCHEMICAL ANALYSIS OF NATURAL PRODUCTS AND RELATED COMPOUNDS BY MODERN CHIROPTICAL METHODS

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The recent technological advance in the chiroptical instrumentation for measurements of Optical Rotation (OR), Electronic Circular Dichroism (ECD), Vibrational Circular Dichroism (VCD) and the enormous progress in theoretical treatments of natural optical activity have not only stimulated the traditional research areas of structure determination and analysis with focus on chirality, but have also inspired new interdisciplinary studies.

For example, more recently the interest to chirality aspects in supramolecular systems[1,2], solute-solvent interactions, molecular sensing and recognitions, and to concerted application of more than one chiroptical experimental method in combination with theoretical analysis[3] have widespread to a greater variety of chemical structures of natural and synthetic origin. All these hot areas of research require now, more then before, interdisciplinary approaches involving the methods of organic, physical organic, bioorganic, inorganic and theoretical chemistry, as well as these of natural products and material sciences.

In this presentation we will discuss some examples on: chiral porphyrin based host-guest complexation[1]; plasmonic enhancement of ECD in presence of silver nanoparticles and chiral supramolecular assemblies[2]; combined application of chiroptical methods for determination of absolute configuration of few fungal metabolites[3]. At the end we will discuss the recent determination of absolute configuration of synthetic 4a-OH riboflavin analog, a key intermediate of FAD-monooxygenate cycle[4].

Related references:

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3. Absolute Configurations of Fungal and Plant Metabolites by Chiroptical Methods. Part 1: ORD, ECD, and VCD Studies on Phyllostin, Scytolide, and Oxysporone, Mazzeo, G.; Santoro, E.; Andolfi, Cimmino, Troselj, P.; Petrovic, A.G.; Superchi,S.; Evidente,A.; Berova, N., *J. Nat. Products*, **2013,** *76*, 588-599.

4. Absolute Stereochemistry of 4a-Hydroxyriboflavin Analog of the Key Intermediate of FAD-Monooxygenase Cycle, Iwahana, S.; Iida, H, ; Yashima, .; Pescitelli, G.; Di Bari, L.; Petrovic, A.G.; Berova, N. *Chemistry-Eur. J.* **2014,** *20*, 4386-4395