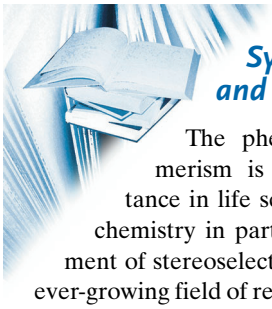

Stereoselective Synthesis of Drugs and Natural Products

The phenomenon of stereoisomerism is of fundamental importance in life sciences in general and in chemistry in particular, and the development of stereoselective transformations is an ever-growing field of research in modern organic chemistry. *Stereoselective Synthesis of Drugs and Natural Products*, edited by Vasyl Andrushko and Natalia Andrushko, is an attempt to condense numerous influential developments in this area into a two-volume book series. Written by a team of reputable authors, the work provides both a general perspective and specific examples of stereoselective synthesis.

At the beginning of Part I, a quite extensive and comprehensive introductory chapter provides the theoretical background to the various types of stereoisomerism, as well as basic principles and strategies of stereoselective transformations. This part also describes some related methods, such as microwave-assisted synthesis and solid phase synthesis, since they are frequently used for the production of drugs and natural products.

Part II is devoted to stereoselective bond-formation methodologies, which are categorized according to the types of bonds formed. Several chapters together provide a good overview of approaches to the synthesis of polyketides and their fragments, alkaloids, terpene-alkaloids, and carbohydrates. The classical asymmetric transformations, such as enantioselective reductions and aldol additions, are also covered in detail. As one would expect, for the majority of the asymmetric transformations described in this part, the corresponding transition states or catalytic cycles are provided to explain the stereochemical outcome of the reaction in question. In order to devise a synthesis for a given natural product or pharmaceutical compound with high chances of success, it is essential to know the range of applicability of each stereoselective transformation used in the sequence. Therefore, the book pays particular attention to the scope and limitations of the methods described, and enables the reader to select the best available options for the intended synthesis. In addition to the purely chemical methods, some biotransformations that can be used in stereoselective synthesis are also included. Many of the chapters in this part of the book contain one or more representative experimental procedures for the transformations described therein, thus giving the reader a clear picture of how the reactions are carried out in the laboratory.

The third part of the work introduces various analytical methods and separation processes related to stereoselective synthesis. Among many techniques covered, the nuclear magnetic resonance spectroscopy and optical methods, including vibrational circular dichroism and Raman optical activity, are discussed in great detail, reflecting their particular importance in assessing the selectivity of a chemical reaction and determining the configuration of asymmetric centers.

The work is generally written in easy-to-follow language, and also features many good quality illustrations, figures, and schemes. A combined subject index, which enables the reader to find both the name reactions and specific compounds, is provided at the end of the second volume. This two-volume set is strongly recommended for synthetic chemists working in the pharmaceutical and fine chemicals industries. In my opinion, it would also be of particularly great value for young scientists who are currently graduating in the area of synthetic organic chemistry and envisage a career in drug discovery, medicinal chemistry, or natural products research. In fact, I would have greatly benefited from a book like this during my doctoral work. The work will also be very useful to those actively involved in the teaching of modern organic chemistry and synthetic methodologies, because it allows one to quickly compile several examples of applications of methods for a lecture and include details of the corresponding transition states without the need to obtain the original publications.

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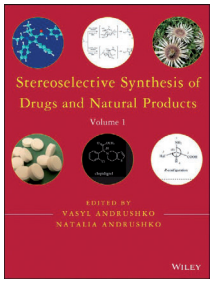
DOI: 10.1002/anie.201403819



Stereoselective Synthesis of Drugs and Natural Products
Edited by Vasyl Andrushko and Natalia Andrushko. John Wiley & Sons, Hoboken, 2013. Two-volume set, 1836 pp., hardcover, € 396.00.—ISBN 978-1118032176