Book & Media Reviews

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Drug Discovery: A History

by Walter Sneader

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reviewed by David J. A. Schedler

This is a fabulously written, fascinating history of the development of drugs. Sneader's expertise in pharmacy and medicinal chemistry is put to good use as he weaves the story of the development of therapeutic drugs from the beginning of human history. The book is written to appeal to a general audience, but certainly its complete and comprehensive presentation would satisfy even a specialist in medicinal and pharmaceutical chemistry. The description of the development of each class of drug would be interesting on its own, but the historical background for each serves to enhance the reader's enjoyment.

The book has three distinct parts. The first focuses on societal influences on the development of medicinal agents. Sneader links drug discovery to geography and explains how the dissemination of medications to future civilizations relied on word of mouth, ancient writings, mythology, and art. The author's argument is interesting and logical. For instance, access to certain species of plant and animal life is certainly limited by the geographic location of the population. This, and the climate, affects both the natural products that are available and the diseases that affect the people in the area. For example, those living in the hot, dry desert climate of the Sahara would search out, by trial and error, balms and lotions to relieve dry skin and eyes. Their search would be limited to the plants found in this environment. Also, the story of how these drugs were discovered and developed comes to us through the writings and art of this particular culture, from cave paintings and mythology to the works of the masters. In this way, Sneader shows the parallel evolution of humankind and the drugs we use. In a similar example, the author makes reference to cave paintings in the central Saharan desert from the period of 7000–5000 B.C.E. that portray the use of hallucinogenic mushrooms. Also, in Homer's *Iliad* reference is made to the cultivation of the poppy plant, establishing the potential use of opiates as early as the eighth century B.C.E.

Once this foundation in history is revealed, the presentation of drug development is divided into two realms: first, drugs from natural sources and their analogs; second, synthetic drugs. The drugs obtained from natural sources are further broken down into those from plants, animals, or microorganisms. In each category there is a separate chapter on every fundamental drug type, which makes the presentation easy to follow and makes it simple to find a topic of interest.

The detailed analysis begins with agents isolated directly from plant extracts and their subsequent use as prototypes for further development. The description of the use of prototypes is common in Sneader's writing. A good example is the discovery of morphine, which led to the recognition of the opiate family of drugs by further investigation of the extracts of the poppy plant. The use of morphine and other opiate alkaloids as prototypes has led to the development of new generations of related drugs. An example is the drug developed by Bayer using the same strategy as for aspirin. The modification of the phenolic hydroxyl group of morphine to prevent irritation to the mucus membranes led to what the company termed a "heroic" new drug, thus the name heroin.

In the chapters comprising the last part of the book, the presentation begins by describing drugs not isolated from natural sources but instead synthesized in the laboratory. These drugs are further classified by those developed through screening and those through serendipity. A good example is the drugs and prototypes discovered through the screening of dyes, including the antibacterial sulfonamides and the antimalarial drug primaquine. The term serendipity is also put into historical perspective as a term coined in the writing of Horace Walpole and derived from a poem about three princes of Serendip (Sri Lanka) who repeatedly made discoveries they had not sought. All of us are familiar with the serendipitous discovery of penicillin by Fleming, but I would encourage you to read this book to learn about lesser known but highly important serendipitous discoveries.

In conclusion, this is a very comprehensive overview of drug development. It should be on the shelf of any aspiring pharmacist, medicinal chemist, or person interested in the history of therapeutic agents. Although writing for a general audience, Sneader does present the structures and chemical principles involved in each class but does so in a way that these are accessible to all readers. There is a comprehensive bibliography that allows easy access to more in-depth scientific literature for those requiring that level of analysis. I highly recommend this book.

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