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A review of: “PERFLUOROCHEMICAL OXYGEN TRANSPORT, (International Anaesthesiology Clinics, Vol. 23, No. 1), Kevin K. Tremper, ed., Little Brown & Co., Boston, 1985, 235 pp.”

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BOOK REVIEW

PERFLUORO-CHEMICAL OXYGEN TRANSPORT, (International Anaesthesiology Clinics, Vol. 23, No. 1), Kevin K. Tremper, ed., Little Brown & Co., Boston, 1985, 235 pp.

Twenty years ago, the mere thought that the oxygen in a perfluorochemical emulsion could support the respiration of a mouse, let alone a human being, would have seemed intriguing, yet unlikely. Today, as we approach the end of the 1980's, perfluorochemicals show great promise for application to human therapeutics. From the moment of their discovery, it was believed that perfluorochemicals would someday be used as oxygen-transport molecules, capable of delivering oxygen to tissues. The study of these substances has progressed from the laboratory to the clinic. One such compound, Fluosol-DA, is currently undergoing clinical trials under the auspices of the FDA.

Perfluorochemicals are not without faults, however. Significant health-endangering side effects have been reported. Whether or not they can be eliminated remains to be determined, but it is the belief of many workers in this field that, in the not-too-distant future, PFC's will be used on a routine basis as oxygen-transporting molecules in humans.

Until recently, there wasn't a great deal of information in the literature concerning possible applications of perfluorochemicals to human therapeutics. This volume, edited by Kevin Tremper, has truly filled this gap. The preface attributes to Dr. Leland C. Clark, Jr. the origin of the concept of applying PFC's to human medical uses. In fact, the first chapter, which presents a broad introduction to the characteristics of PFC's, as well as their uses in humans, is written by Dr. Clark.

The remaining chapters are written by noted experts in this field. There is an excellent chapter on the chemistry of selected perfluorochemicals which are under consideration for human application. It is well written, and will be readily understood by those who have limited backgrounds in chemistry. There are several chapters which describe the use of PFC's as temporary blood substitutes, including descriptions of both whole body and isolated organ perfusion. This group of chapters also covers immunological compatibility and effects of these substances on the human reticuloendothelial system.

Four outstanding chapters are included which deal with therapeutic uses of PFC's in various animal studies. These include applications to open heart surgery, myocardial ischemic rescue, treatment of cerebral

ischemia and the resuscitation of hemorrhage. Although these chapters only include non-human animal studies, it is the expressed desire of all of the authors that their findings would someday be applied to human therapeutics.

Two chapters deal with the present status of clinical studies involving a single PFC, Fluosol-DA, in the United States and in Japan. The final chapter does an outstanding job in summarizing the potential uses of PFC's. Furthermore, it speculates on what the future may hold for human application of perfluorochemicals.

Overall, this book gives the reader an outstanding introduction to perfluorochemicals and their uses. Chemical and biological characteristics of perfluorochemicals are adequately covered; detailed descriptions of selected therapeutic applications are presented. Most chapters include very recent research findings. The material is presented in a manner that can be readily understood and assimilated by novices to this field. Perfluorochemical Oxygen Transport is a valuable reference tool for everyone currently involved in this field and for those who plan to enter into this potentially monumental area of human therapeutic science.

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