

# Extemporaneous Ophthalmic Preparations

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Springer

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*To my dear Father “Ali”  
(May God save him)  
Who taught me the meaning of life  
I will mention my name with his name all  
my life*

*To my dear Mother “Mona”  
(May God save her)  
The source of love and the one whose  
prayers are behind my success  
I owe you who I am today*

*To my dear Husband “Firas”  
(May God save him)  
Who has been a constant source of support  
and encouragement during the critical  
times*

**Eman Ali Saeed Alghamdi**

# Preface

Pharmaceutical industries have greatly expanded their share of ophthalmic drugs in recent years. However, physicians and pharmacists are frequently called to prepare sterile products intended for ophthalmic use due to a lack of availability of licensed drugs in the market.

The goal of this handbook is to produce a list of concise extemporaneous ophthalmic preparations and to standardize the formulation of the products by suggesting specific strength, route of administration, appropriate vehicle, and method of preparation.

This handbook contains the most appropriate formulation of each medication based on published and documented stability data. It is divided into five sections. The first part is an introduction to the principles of extemporaneous ophthalmic preparations in terms of ocular pharmacokinetics (Chap. 1), factors affecting bioavailability and efficacy of topical eye preparations (Chap. 2), ideal characteristics of ophthalmic drug delivery system (Chap. 3), inactive ingredients used in the preparation of ophthalmic products (Chap. 4), and the preservatives used in ophthalmic preparations (Chap. 5). The second part is devoted to extemporaneous topical ophthalmic formulations. It presents the topical ophthalmic drug forms (Chap. 6), the extemporaneous compounding of ophthalmic products (Chap. 7), and guidelines of the American Society of Health-System Pharmacists (ASHP) on pharmacy-prepared ophthalmic products (Chap. 8). In this part, 24 preparations are discussed in terms of formulation, use and indications, the procedure of preparation, packaging and storage, and special precautions. The third part presents the extemporaneous intraocular injections. It is divided into intravitreal injections (Chap. 10) and intracameral injections (Chap. 11). Fifteen formulations are discussed in Chap. 12 in terms of use and indications, the procedure of preparation, packaging and storage, and special precautions. The fourth part discusses the extemporaneous subconjunctival injections. Equipment and steps for subconjunctival injections are explained in Chap. 13. Four formulations of the extemporaneous subconjunctival injections are presented in Chap. 14. Finally, the fifth part is devoted to extemporaneous ophthalmic preparations in ocular oncology. Five formulations are discussed in Chap. 15.

The editors feel this book will make a welcome companion for many physicians and pharmacy practitioners who are frequently engaged in the compounding of sterile ophthalmic preparations.

Riyadh, Saudi Arabia  
Riyadh, Saudi Arabia  
Dubai, United Arab Emirates  
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# Abstract

In the daily practice of ophthalmologists, many diseases require special treatments for several reasons. The disease might be rare enough, so no commercially prepared ophthalmic drugs are available. Specific concentrations of medications are needed at eye tissue level to achieve the desired effect. The medications should be directly delivered to the site of pathology. In addition, there is a shortage of ready-made medications.

All the above reasons necessitate unlicensed extemporaneous ophthalmic formulation. Mostly, these preparations are off-label products, which means an unapproved route of administration, unapproved indication, or unapproved age group. Pharmacist, based on physicians' requests under specific regulations and guidelines, prepares these formulations extemporaneously. Moreover, these preparations are preservative-free; therefore, they have a short expiry date and require special precautions in preparations and storage.

This book is to cover this important topic. It provides guidelines, concentrations, method of preparations, and storage conditions for pharmacists and provides indications and method of applications for ophthalmologists.

This book is the first of its kind in the market. It covers all the unlicensed, off-label ophthalmic medications that ophthalmologists may need. It gathers all the scattered updated information from different sources. It delivers the information in a systemic, direct-to-the-point, and easy-to-find method.



# Acknowledgment

Firstly, I would like to acknowledge Professor Mazen M. Sinjab for his academic guidance and great efforts to produce the book in this systematic and academic design. We benefited to a great extent from his long experience in writing academic books in ophthalmology.

A special gratitude I give to Dr. Abdulmalik Alqahtani for his contribution, advice, ideas, support, and patience in guiding me through this project. Thank you for your enthusiasm to complete this work; your wealth of knowledge in the field of ophthalmology medications, in particular, is inspiring. Thank you for giving me the opportunity to grow in this field of ophthalmic extemporaneous preparation.

I extend my sincere gratitude to Dr. Khalid Alyahya whose contribution, support and encouragement helped me significantly to complete this book.

I would also like to acknowledge the support of other Prince Sultan Military Medical City colleagues along the way including the pharmacists and ophthalmologists who assisted us in preparing such guidance for sterile ophthalmic extemporaneous preparation.

Riyadh, Saudi Arabia

Eman Ali Saeed Alghamdi

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