




Concepts in  
**Biochemistry**  
with Clinical Approach  
for Undergraduate Medical Students

As per the latest competency-based curriculum prescribed by Medical Council of India



Poonam Agrawal



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As per the latest competency-based curriculum prescribed by Medical Council of India

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to

*the medical students who are learning to  
reduce the suffering of  
humanity*



# Foreword

**T**here was always a need of a biochemistry book, which could provide all the topics to be learned by medical undergraduates in a concise, relevant and organized fashion blended with clinical correlations.

Finally, we have this book *Concepts in Biochemistry with Clinical Approach* written by an excellent teacher who is well known for her unique simplified approach towards the subject. Her style of teaching is well reflected

in various chapters and student community will largely benefit from her insight into the subject.

This book explains all the topics in a simple and reproducible manner with the help of innumerable illustrations and flowcharts which are easily imprinted in learners mind, making the learning of biochemistry easy.

I wish ma'am all the very best for this enthusiastic work.



**Katyani Sharma**

MBBS, Phase II, ACMS, New Delhi  
GGSIPU University Batch Topper (2017–2018)





# Preface

**M**edical undergraduates face a special challenge of time constraint in first year of 4½ years MBBS curriculum, as they have to learn three important subjects – biochemistry, anatomy and physiology in limited time frame with good detail. As an author, every effort is made to deliver relevant and ‘to the point information’ in a simple and lucid manner with precise clinical correlation.

While describing the clinical connections, special precaution has been taken to keep the discussion simple, keeping in mind that first year medical undergraduate student who is reading this book has no exposure to

patients or hospital settings in the real world. Every effort is made to help the student learn the subject in an easy and reproducible manner with the help of a plenty of diagrams and flowcharts.

This book is written keeping in the mind the latest MCI guidelines on competencies based medical education (CBME) and the competencies covered in a chapter are mentioned at the beginning of the chapter itself.

I wish learner find this book useful for their learning of biochemistry with its relevance in clinical setting.

Feedback and comments are most welcomed and will be duly acknowledged in the next edition.

**Poonam Agrawal**

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# Acknowledgment

**F**irst of all, I thank Almighty for giving me the dream and then the courage to work hard to best of my abilities to fulfil that dream.

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Dr Alpana Saxena: Director Professor, Dr BSAMCH, New Delhi

Dr Anju Jain: Director Professor and Head, LHMC, New Delhi

Dr T K Mishra: Ex-Director Professor and Head, MAMC, New Delhi

All my students who approach me for discussions, doubt clarification, deserve special thanks, as their interaction enlightens me of their difficulties, give an insight to the subject and help me grow as a teacher.

My friends Dr Sumita Sethi, Associate Professor BPSGMC; Dr Binita Goswami, Professor, MAMC;

Dr Niket Verma, Assistant Professor, AIMS, New Delhi; Dr R Shanti, Professor and HOD, GMC Omandurar, deserve thanks from bottom of my heart as their association has made my life more meaningful.

It has been a long and challenging journey with many editing, rewritings and reframing. I thank my husband **Dr Mohit Agrawal**, who has been a constant guide and motivator throughout the preparation of this book. It is not an exaggeration to say that this work is the result of his belief in my abilities, which kept me going non-stop in this roller coaster journey.

I am obliged to my little angel '**Misti**' for her understanding and full cooperation, when at times I was totally engrossed in writing chapters for this book, even on her Sundays and holidays. Blessings of my parents 'Dr. Shri Prakash Agarwal' and 'Mrs. Manju Agarwal' and my parent-in-laws 'Mr. Ram Baboo Agarwal' and 'Late Smt. Aadesh Agarwal' are most valuable asset, which support me through all walks of life.

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**Poonam Agrawal**

# Contents

*Foreword* vii

---

*Preface* ix

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## Section 1

### CELL AND ITS BIOMOLECULES

1. Cell and its Organelles	3
2. Enzymes	8
3. Carbohydrates and their Chemistry	22
4. Amino Acids and their Chemistry	27
5. Lipids and their Chemistry	31

---

## Section 2

### PROTEINS, MEMBRANE AND EXTRACELLULAR MATRIX

6. Proteins: Structure and Properties	45
7. Plasma Membrane	54
8. Plasma Proteins	59
9. Extracellular Matrix (ECM)	63
10. Intracellular Protein Sorting	69

---

## Section 3

### METABOLISM OF CARBOHYDRATES

11. Carbohydrate Metabolism I: Metabolism of Glucose	77
12. Carbohydrate Metabolism II: Metabolism of Other Carbohydrates	92

---

**Section 4**  
**METABOLISM OF LIPIDS**

13. Lipid Metabolism I: Fatty Acid Synthesis	105
14. Oxidation of Fatty Acid	109
15. Ketone Body: Synthesis and Utilization	113
16. Eicosanoids and Compound Lipids	115
17. Metabolism of Cholesterol	117
18. Lipoprotein Metabolism	120
19. Lipoprotein Disorders	128

**Section 5**  
**METABOLISM OF AMINO ACIDS**

20. Amino Acid Metabolism I: Overview and Urea Cycle	141
21. Amino Acid Metabolism II: Metabolism of Aliphatic Amino Acids	145
22. Aromatic Amino Acids	155

**Section 6**  
**INTEGRATED PATHWAYS**

23. TCA Cycle	169
24. Metabolic Integration in Various Physiological and Pathological States	172
25. Electron Transport Chain (ETC) and Oxidative Phosphorylation	180

**Section 7**  
**NUTRITION, VITAMINS AND MINERALS**

26. Nutrition	193
27. Water Soluble Vitamins	198
28. Fat Soluble Vitamins	209
29. Minerals and their Metabolism	223

**Section 8**  
**MISCELLANEOUS TOPICS**

30. Water and Electrolyte Balance in Human Body	235
31. Organ Function Key (KFT and LFT)	240

**Section 9****NUCLEIC ACIDS: CHEMISTRY, METABOLISM AND APPLIED ASPECTS**

32. Nucleotides: Chemistry and their Metabolism	247
33. Nucleic Acid I: Structural Organization of DNA and RNA	253
34. Nucleic Acid II: DNA Replication (Prokaryotes and Eukaryotes)	259
35. Nucleic Acid III: Transcription and Post-Transcriptional Modifications	266
36. Nucleic Acid IV: Translation and Post-Translational Modifications	274
37. Gene Expression and Regulation	277
38. Technologies in Genetics	279

**Section 10****HEME AND HEMOPROTEINS**

39. Heme Metabolism	311
40. Hemoglobin and Myoglobin	315

**Section 11****OXIDATIVE STRESS AND CANCER**

41. Free Radicals	321
42. Biotransformation	324
43. Cancer Biochemistry	326
44. Tumor Marker	330
<i>Index</i>	333



