

Contents

Preface vii

Acknowledgements viii

Abbreviations and acronyms ix

SECTION

1

General principles

1. What is pharmacology? 3
2. How drugs act: general principles 8
3. How drugs act: molecular aspects 24
4. How drugs act: cellular aspects—excitation, contraction and secretion 54
5. Cell proliferation and apoptosis 72
6. Method and measurement in pharmacology 87
7. Absorption and distribution of drugs 98
8. Drug elimination and pharmacokinetics 113

SECTION

2

Chemical mediators

9. Chemical mediators and the autonomic nervous system 131
10. Cholinergic transmission 144
11. Noradrenergic transmission 168
12. Other peripheral mediators: 5-hydroxytryptamine and purines 189
13. Local hormones, inflammation and immune reactions 202
14. Anti-inflammatory and immunosuppressant drugs 226
15. Cannabinoids 248
16. Peptides and proteins as mediators 256
17. Nitric oxide 265

Drugs affecting major organ systems

18. The heart 277
19. The vascular system 298
20. Atherosclerosis and lipoprotein metabolism 321
21. Haemostasis and thrombosis 331
22. The haemopoietic system 347
23. The respiratory system 356
24. The kidney 368
25. The gastrointestinal tract 385
26. The endocrine pancreas and the control of blood glucose 397
27. Obesity 410
28. The pituitary and the adrenal cortex 420
29. The thyroid 437
30. The reproductive system 445
31. Bone metabolism 461

CONTENTS

SECTION

4

The nervous system

- 32. Chemical transmission and drug action in the central nervous system 473
- 33. Amino acid transmitters 479
- 34. Other transmitters and modulators 492
- 35. Neurodegenerative diseases 508
- 36. General anaesthetic agents 523
- 37. Anxiolytic and hypnotic drugs 535
- 38. Antipsychotic drugs 545
- 39. Antidepressant drugs 557
- 40. Antiepileptic drugs 575
- 41. Analgesic drugs 588
- 42. CNS stimulants and psychotomimetic drugs 610
- 43. Drug addiction, dependence and abuse 619
- 44. Local anaesthetics and other drugs affecting sodium channels 638

SECTION

5

Drugs used in the treatment of infections and cancer

- 45. Drugs used in the treatment of infections and cancer 647
- 46. Antibacterial drugs 661
- 47. Antiviral drugs 679
- 48. Antifungal drugs 692
- 49. Antiprotozoal drugs 698
- 50. Antihelminthic drugs 712
- 51. Cancer chemotherapy 718

Special topics

- 52. Individual variation and drug interaction 739
- 53. Harmful effects of drugs 751
- 54. Lifestyle drugs and drugs in sport 765
- 55. Biopharmaceuticals and gene therapy 770
- 56. Drug discovery and development 781

Appendix 787

Index 797