Contents

1 Allergy—Definition ................................................................. 1
   1.1 Self and Non-self ......................................................... 1
   1.2 An Optimum Balance Between Th1 and Th2 Cells ............... 1
   1.3 The Meaning of Allergy ............................................... 2
   1.4 A Note on Historical Perspective ................................. 3

2 Allergy—Fact File ................................................................. 5
   2.1 Global Burden of Allergy—An Estimate ......................... 5
   2.2 Socio Economic Impact of Allergy ............................... 7
   2.3 Allergy Is More Common in Urban Landscape .................. 7
   2.4 Allergy: A Lifestyle Disorder ...................................... 8
   2.5 Allergy Is a Big Burden in Western Communities—Controversies and Realities ................................. 9
   2.6 Allergy: A Stress Related Phenomenon .......................... 9

3 Possible Allergens in Our Surroundings ................................. 11
   3.1 Role of Pollens and Moulds ......................................... 11
   3.2 Allergens of Animal Origin—Insects, Mites and Pets ......... 12
   3.3 Food Allergy—Types and Consequences ......................... 13
   3.4 Importance of Chemicals, Drugs and Medicines, Cosmetics, Latex etc. .............................................. 13
   3.5 Occupational Allergy at Working Places ....................... 14

4 Mechanism of Allergic Reaction ........................................... 17
   4.1 Different Components Involved in Allergic Reaction—Immunoglobulin E (IgE) Antibody, Mast Cells, Eosinophils and Basophils ......................................................... 17
   4.2 Basic Mechanism and Types ........................................ 18
   4.3 Immunoglobulin E (IgE) and Its Biological Role in Allergy ......................................................... 21
   4.4 Immunoglobulins Other Than IgE in Allergy .................. 24
5 House Dust Mite Allergy—An Environmental Enigma ............... 25
  5.1 The Mighty Mites and Their Medical Importance ............... 26
  5.2 Mites as Parasite ........................................... 27
  5.3 Mites as Vectors of Pathogens ................................ 28
  5.4 Mites as Source of Potent Allergen .......................... 29
6 House Dust Mites—A Precarious Indoor Allergen ..................... 33
  6.1 Systematic Account and Identifying Features
    of House Dust Mites ............................................ 33
  6.2 Mites in House Dust at Global Scale .......................... 34
  6.3 Predominance of *Dermatophagoides* Species in House Dust ... 36
  6.4 Does Mite Density Influence the Frequency of Disease? ....... 37
  6.5 Mites Other Than *Dermatophagoides* in Allergy ................. 38
  6.6 Isolation and Extraction of Mites from House Dust ............. 39
  6.7 Biology of House Dust Mites .................................. 40
  6.8 Culture of House Dust Mites ................................... 42
  6.9 Habitat Preferences of House Dust Mites ........................ 42
  6.10 Seasonal Fluctuations of House Dust Mites ..................... 44
7 Dust Mite Allergy—Evaluation Procedures ............................. 47
  7.1 Primary Screening Through Skin Prick Test ...................... 48
  7.2 Cross Reactivity Between Different Mite Allergens .............. 48
  7.3 Eosinophil Profile in Pathophysiology of Allergic Disorders ... 50
  7.4 Estimation of Total Serum IgE Level and Detection
    of Allergen Specific IgE Antibodies .......................... 50
8 House Dust Mite Allergy—Indian Perspective ........................ 53
  8.1 Diversity and Distribution of Mites in Indian House Dust ....... 53
  8.2 Isolation and Culture of House Dust Mites ...................... 55
  8.3 Differences in Mite Abundance Between Allergic
    and Non-allergic Homes ........................................ 56
  8.4 Habitat Preference of House Dust Mites ........................ 56
  8.5 Seasonal Population Structure of House Dust Mite ............... 58
  8.6 Dust Mite—A Potent Allergen of Indian House Dust ............. 59
  8.7 House Dust Mite Allergy in Kolkata—A Case Study .............. 62
9 Allergy and Heredity—Genetic Links .................................. 65
10 Allergic Manifestations and Their Diagnosis ......................... 67
  10.1 Manifestations ............................................... 67
  10.2 Diagnostic Procedures ........................................ 69
    10.2.1 Documentation of Case History and Family
          History ....................................................... 69
    10.2.2 Physical Examinations .................................... 69
    10.2.3 Allergen Provocation Test or Bronchial
          Challenge Test ............................................. 69
    10.2.4 Skin Prick Test as Basic Screening Procedure ............ 70
10.2.5 Role of Peripheral Blood and Sputum Eosinophil Count on Diagnosis .......................... 71
10.2.6 Quantification of Total Serum IgE Level .................... 72
10.2.7 Detection of Allergen Specific IgE Antibodies as Confirmative Test .......................... 73
10.2.8 Diagnostic Efficacy of Skin Test and RAST and Their Limitations .......................... 73

11 Dust Mite Allergy Management—Common Practices .............. 75
11.1 Allergen Avoidance ........................................ 75
11.2 Change in Lifestyle ........................................ 76
11.3 Medication .................................................. 76
11.4 Immunotherapy or Desensitization ............................ 77
11.5 Prevention .................................................. 77
11.6 Management Practices ..................................... 78

References ....................................................... 81

Index ........................................................... 97
Dust Allergy: Cause & Concern
Indian Perspective
Saha, G.K.
2016, XV, 99 p. 8 illus., Hardcover
ISBN: 978-981-10-1824-4