BOOK REVIEW

Title:	**Fundamentals of Biostatistics**
Authors:	Dr. Irfan Ali Khan, Dr. Aditya Khanum and Dr. Shiba Khan (Additional Collaborative Author)
Publisher:	Ukaaz Publications, Hyderabad, Telangana State, India
Edition:	Revised Fifth Edition
Year:	**2018**
Pages:	**878 + XXVI**

Reviewed by:

Dr. Ajit Kumar Thakur
Assistant Professor of Pharmacology
School of Pharmaceutical Sciences
Delhi Pharmaceutical Sciences and Research University
New Delhi - 110 017

I would like to thank Professor Raman Dang, Editor, APTI Bulletin, published by APTI, Bangalore and Registrar, Delhi Pharmaceutical Sciences and Research University (DPSRU), New Delhi, India, for giving me this opportunity for reviewing the book entitled "**Fundamentals of Biostatistics**" authored by Dr. Irfan Ali Khan, Dr. Aditya Khanum and Dr. Shiba Khan (Additional Collaborative Author).

Biostatistics is considered as the subject of applied mathematics whose application is broad in the field of Life Sciences and provides tools for collecting, organizing, presenting, analyzing and interpreting the numerical data. Khan *et al*. (2018) have nicely presented this book that covers all the topics which are relevant to application of statistics in Basic Sciences, Agricultural Sciences, Pharmaceutical Sciences and Medical Sciences. This book comprehensively covers the contents and outline of new PCI Syllabus of B. Pharm. with the course name "Biostatistics and Research Methodology" of Semester VIII. Apart from this, book nicely covered the PCI syllabus of M. Pharm. with course name "Research Methodology and Biostatistics" (Common for all specializations of M. Pharm. Semester II). This book will also be more useful for the of Ph.D. Scholars of Pharmaceutical Sciences, especially involved in Pharmacological Research.

This revised edition contains 20 systemic chapters. Each chapter is full of theoretical discussion, mathematical equations and explanations of the biostatistical terminology. Besides this, each chapter of this book contains examples and illustrative problems with their descriptive solution and some chapters also contains review exercises to understand the fundamental concept and principles very clearly.

Remarkably, all the chapters in this revised edition are very informative. Particularly, five new chapters will work as filler for the gap of knowledge. The Chapter 2, "Data Collection and Treatment" contains the basic concept of data collection, classification and tabulation which will definitely construct good foundation for the beginners in biostatistics. Chapter 14, "Estimation Theory and Hypothesis Testing" covers the concept of estimation theory, hypothesis testing and the importance of standard error generally encountered by research scholars. Chapters 15 and 16 are also helpful in understanding the test of significance for large and small samples. In my opinion, the new Chapter 18, "Nonparametric Tests" is needful for understanding the analysis of data which are generally small in size and useful in preclinical studies/pharmacological research of new drugs and development of novel pharmaceutical formulations. Authors have also nicely explained the basic concepts, assumption, choice and use of nonparametric tests along with 13 suitable examples, 17 illustrative problems and 41 review exercises in the Chapter 18.

Overall, the book provides wonderful compilation of an interesting and useful reading material for Biostatistics and understanding the fundamentals of Biostatistics. I recommend this book to the students, research scholars and faculty members from the field of Basic Sciences, Agricultural Sciences, Pharmaceutical Sciences and Medical Sciences. This book will also be very useful for industry persons and lifetime learners. Hope, this book will cater to the academic need of the students and also rank them well in competitive examinations. I congratulate the authors for coming up with such a restructured and systematically arranged chapters in the revised fifth edition book entitled "Fundamentals of Biostatistics".

Contents

Preface to the fifth revised edition vi

Acknowledgements ix

Preface to the first edition x

1. INTRODUCTION 1

2. DATA COLLECTION AND TREATMENT 5

2.1 Introduction 5

2.2 Significant digits and rounding off numbers 6

2.2.1 Introduction 6

2.2.2 Significant digits 8

2.2.2.1 Method 8
2.2.2.2 Rules for counting significant digits 9
2.2.2.3 More about travelling zeroes 9
2.2.2.4 More about significant digits 10
2.2.3 Rounding off. . . 10
2.2.3.1 Rounding off numbers 11
2.2.3.2 Rules of rounding off numbers 11
2.2.3.3 Computations with rounding off numbers 12
2.2.3.4 Effect of mathematical operations 16
2.3 Data collection 16
2.3.1 Introduction 16
2.3.2 Types of statistical data 19
2.3.2.1 Methods of collecting primary data 19
2.3.2.2 Methods of collecting secondary data 20
2.3.3 Sources of collection of data 20
2.3.4 Tools of collection of data 21
2.3.5 Methods of collection of data 22
2.3.6 Measurements of statistical data 23
2.3.6.1 Introduction 23
2.4 Classification and tabulation 24
2.4.1 Introduction 24
2.4.2 Classification 25
2.4.2.1 Types of classification 25
2.4.3 Tabulation 26
2.4.3.1 Types of tables 28
3. SAMPLING TECHNIQUES 31
3.1 Introduction 31
3.2 Size of the sample 33
3.2.1 Determination of sample size 34
3.3 Methods of sampling 34
3.3.1 Random sampling methods 34
3.3.1.1 Random sampling 34
3.3.1.2 Stratified sampling 37
3.3.1.3 Systematic sampling 38
3.3.1.4 Cluster sampling 39
3.3.2 Non-random sampling methods 39
3.3.2.1 Judgement, purposive or deliberate sampling 39
3.3.2.2 Convenience sampling 40
3.3.2.3 Quota sampling 40
3.4 Choice of sampling methods 40
3.5 Sampling and non-sampling errors 41

3.5.1 Sampling errors 41
3.5.2 Measurement of sampling errors 42
3.5.3 Non-sampling errors 42
4. DIAGRAMMATIC REPRESENTATION OF DATA 43
4.1 Introduction 43
4.2 Representation of data 50
4.2.1 Line diagram 51
4.2.2 One-dimentional diagram or bar diagram 52
4.2.2.1 Simple bar diagram 53
4.2.2.2 Divided bar diagram 53
4.2.2.3 Percentage divided bar diagram 54
4.2.2.4 Multiple bar diagram 55
4.2.3 Two-dimentional diagrams 57
4.2.4 Pie diagram 57
4.2.5 Three-dimentional diagrams 59
4.3 Significance of diagrammatic representation 60
4.4 Limitations of diagrammatic representation 61
4.5 Illustrative problems 61
4.6 Review exercises 65
5. GRAPHIC REPRESENTATION OF DATA 71
5.1 Introduction 71
5.2 Graphic representation of data 76
5.2.1 Histogram 76
5.3 Graphs of frequency distributions 80
5.3.1 Frequency polygon 80
5.3.2 Frequency curve 82
5.3.3 Cumulative frequency curve or ogive 83
5.4 Significance of graphic representation 86
5.5 Limitations of graphic representation 86
5.6 Illustrative problems 87
5.7 Review exercises 91
6. MEASURES OF CENTRAL TENDENCY 100
6.1 Introduction 100
6.2 Arithmetic mean 103
6.2.1 Introduction 103
6.2.2 Calculation of simple arithmetic mean 103
6.2.2.1 Calculation of simple arithmetic mean in a series of individual observations 103
6.2.2.2 Calculation of simple arithmetic mean in a discrete series 106
6.2.2.3 Calculation of simple arithmetic mean in a continuous series 108
6.2.2.4 Calculation of simple arithmetic mean in series having open-end classes 111
6.2.3 Merits and demerits of arithmetic mean 111

6.3 Weighted arithmetic mean 112
6.3.1 Introduction 112
6.4 Median 116
6.4.1 Introduction 116
6.4.2 Calculation of median 117
6.4.2.1 Calculation of median in a series of individual observations 117
6.4.2.2 Calculation of median in a discrete series 119
6.4.2.3 Calculation of median in a continuous series 120
6.4.2.4 Calculation of median in unequal class-intervals 121
6.4.2.5 Calculation of median in open-end classes 122
6.4.2.6 Graphic location of median 123
6.4.3 Merits and demerits of median 125
6.5 Mode 126
6.5.1 Introduction 126
6.5.2 Calculation of mode 128
6.5.2.1 Calculation of mode in a series of individual observations 128
6.5.2.2 Calculation of mode in a discrete series 129
6.5.2.3 Calculation of mode in a continuous series 130
6.5.2.4 Calculation of mode in unequal class-intervals 132
6.5.2.5 Graphic location of mode 133
6.5.3 Merits and demerits of mode 135
6.6 Geometric mean 137
6.6.1 Introduction 137
6.6.2 Calculation of geometric mean 138
6.6.2.1 Calculation of geometric mean in a series of individual observations 138
6.6.2.2 Calculation of geometric mean in a discrete series 140
6.6.2.3 Calculation of geometric mean in a continuous series 140
6.6.3 Merits and demerits of geometric mean 141
6.7 Harmonic mean 142
6.7.1 Introduction 142
6.7.2 Calculation of harmonic mean 143
6.7.2.1 Calculation of harmonic mean in a series of individual observations 143
6.7.2.2 Calculation of harmonic mean in a discrete series 144
6.7.2.3 Calculation of harmonic mean in a continuous series 145
6.7.3 Merits and demerits of harmonic mean 146
6.8 Illustrative problems 147
6.9 Review exercises 163
7. MEASURES OF DISPERSION 170
7.1 Introduction 170
7.2 Dispersion 170
7.3 Methods of measuring dispersion 173

7.3.1 Range 174
7.3.1.1 Characteristics of range 174
7.3.1.2 Coefficient of range 174
7.3.2 Mean deviation or average deviation 176
7.3.2.1 Coefficient of mean deviation 178
7.3.2.2 Calculation of mean deviation 178
7.3.3 Variance and standard deviation 182
7.3.3.1 Variance 182
7.3.3.2 Standard deviation 184
7.3.3.3 Calculation of standard deviation 186
7.3.3.4 Coefficient of variation 193
7.4 Illustrative problems 196
7.5 Review exercises 210
8. MEASURES OF SKEWNESS, MOMENTS AND KURTOSIS 216
8.1 Introduction 216
8.2 Skewness 216
8.2.1 Test of skewness 218
8.2.2 Measures of skewness 219
8.2.3 Karl Pearson's coefficient of skewness 220
8.3 Moments 223
8.3.1 Introduction 223
8.3.2 Central moments 223
8.4 Kurtosis 225
8.4.1 Measures of kurtosis 226
8.5 Illustrative problems 227
8.6 Review exercises 237
9. BASIC CONCEPTS OF PROBABILITY 240
9.1 Introduction 240
9.1.1 History of probability 241
9.2 Probability 241
9.2.1 Classical or 'a priori' probability 244
9.2.2 Relative frequency theory of probability 245
9.2.3 Subjective theory of probability 246
9.2.4 Axiomatic approach to probability 246
9.3 Importance of the concept of probability 247
9.4 Basic terminology 247
9.5 Theorems of probability 256
9.5.1 Addition rule 256
9.5.1.1 Addition rule for mutually exclusive events 256
9.5.1.2 Addition rule when events are not mutually exclusive 256
9.5.2 Multiplication rule 257

9.5.2.1 Multiplication rule for independent events 257
9.5.2.2 Multiplication rule for dependent events 258
9.5.3 Bayes' rule 259
9.6 Further concepts in probability 261
9.6.1 Introduction 261
9.6.2 Probability with the independent events 264
9.6.2.1 Marginal probability 265
9.6.2.2 Joint probability 265
9.6.2.3 Conditional probability 269
9.6.3 Probability with the dependent events 269
9.6.3.1 Conditional probability 272
9.6.3.2 Joint probability 274
9.6.3.3 Marginal probability 274
9.7 Probability applications 275
9.8 Illustrative problems 280
9.9 Review exercises 291
10. THEORETICAL PROBABILITY DISTRIBUTIONS 296
10.1 Introduction 296
10.2 Binomial distribution 297
10.2.1 Assumptions of Binomial distribution 300
10.2.2 Importance of the Binomial distribution 301
10.2.3 Properties of Binomial distribution 301
10.3 Poisson distribution 303
10.3.1 Characteristics of Poisson distribution 306
10.3.2 Applications of Poisson distribution 306
10.3.3 Binomial approximation to Poisson distribution 307
10.3.4 Fitting of a Poisson distribution 307
10.3.5 Constants of the Poisson distribution 309
10.4 Normal distribution 310
10.4.1 Standard Normal distribution 311
10.4.2 Importance of the Normal distribution 312
10.4.3 Properties of Normal distribution 313
10.4.4 Relationship among various distributions 314
10.4.5 Constants of the Normal distribution 315
10.4.6 Normal distribution curves 315
10.4.7 Area under Normal distribution 316
10.4.8 Standard Normal curve 317
10.4.9 Conditions for the Normal curve 317
10.4.10 Determining the suitability of the Normal curve 318
10.4.11 Computing Normal curve probabilities 318

10.5 Illustrative problems 319
10.6 Review exercises 329
11. CORRELATION ANALYSIS 333
11.1 Introduction 333
11.2 Correlation analysis 334
11.2.1 General uses of correlation 336
11.2.2 Correlation and causation 336
11.3 Simple correlation 337
11.4 Types of correlation 338
11.4.1 Positive or negative correlation 338
11.4.2 Simple, partial and multiple correlation 339
11.4.3 Linear and non-linear correlation 339
11.5 Methods of studying correlation 339
11.5.1 Graphic methods 340
11.5.1.1 Scatter diagram method 340
11.5.1.2 Graphic method 343
11.5.2 Mathematical methods 344
11.5.2.1 Karl Pearsons's correlation coefficient 344
11.5.2.2 Spearman's rank correlation coefficient 353
11.6 Partial correlation analysis 357
11.6.1 Partial correlation coefficient 357
11.6.1.1 Partial correlation coefficient in three variables 358
11.6.1.2 Partial correlation coefficient in four variables 359
11.6.1.3 Computation of the coefficients of partial correlation 360
11.7 Illustrative problems 362
11.8 Review exercises 374
12. REGRESSION ANALYSIS 380
12.1 Introduction 380
12.2 Difference between correlation and regression 381
12.3 Application of regression analysis 382
12.4 Uses of regression analysis 382
12.5 Significance of regression analysis 383
12.6 Kinds of regression analysis 383
12.6.1 Simple and multiple regression analysis 384
12.6.2 Total and partial regression analysis 384
12.6.3 Linear and non-linear regression analysis 384
12.7 Methods of studying regression 385
12.7.1 Graphic method 385
12.7.1.1 Regression Lines 387
12.7.2 Algebraic method 388
12.7.2.1 Regression equations 388

12.7.2.2 Regression coefficients 390
12.7.2.3 Significance test for regression coefficient 391
12.7.2.4 Fitting of regression equations by the method of least squares 394
12.8 Prediction from the regression equation 395
12.9 Standard error of the estimate 396
12.10 Multiple regression analysis 397
12.10.1 Multiple regression equations: Two independent variables 398
12.10.2 Multiple regression equations: Three independent variables 401
12.11 Uses of multiple regression 402
12.12 Assumptions and cautions in the uses of multiple regression 402
12.13 Illustrative problems 403
12.14 Review exercises 417
13. CHI-SQUARE TEST 420
13.1 Introduction 420
13.1.1 Definition and explanation 420
13.1.2 Levels of significance 422
13.1.3 Degrees of freedom (d.f.) 422
13.1.4 Form of chi-square distribution 424
13.1.4.1 Properties of chi-square distribution 425
13.1.4.2 Constants of chi-square distribution 425
13.1.5 Characteristics of chi-square test 426
13.1.6 Assumptions for validity of chi-square test 426
13.2 Applications of chi-square test 426
13.2.1 Chi-square test as a test of goodness of fit 426
13.2.1.1 Fitting the Binomial distribution and testing the goodness of fit 430
13.2.1.2 Fitting the Poisson distribution and testing the goodness of fit 431
13.2.1.3 Fitting the Normal distribution and testing the goodness of fit 433
13.2.2 Chi-square test as a test of independence 436
13.2.3 Chi-square test as a test of homogeneity 439
13.2.4 Chi-square test as a test to detect linkage 441
13.3 Illustrative problems 444
13.4 Review exercises 475
14. ESTIMATION THEORY AND HYPOTHESIS TESTING 487
14.1 Introduction 487
14.2 Estimation theory or statistical estimation 488
14.2.1 Point estimation 488
14.2.2 Interval estimate 488
14.2.3 Criteria of a good estimator 489
14.3 Confidence intervals 490
14.3.1 Confidence interval of the mean 490
14.4 Estimation of confidence limits of population mean 491

14.5 Confidence limits for the population parameters 492
14.6 Hypothesis testing 493
14.6.1 Sampling distribution and standard error 493
14.6.2 Difference between standard deviation and standard error 494
14.6.3 Difference between parameter and statistic 494
14.7 Statistical importance of standard error 494
14.7.1 Significance of difference in means and proportions 495
14.7.1.1 Standard error of mean 495
14.7.1.2 Standard error of proportion 497
14.7.1.3 Standard error of difference between two means 498
14.7.1.4 Standard error of difference between two proportions 500
15. TEST OF SIGNIFICANCE: LARGE SAMPLES 503
15.1 Introduction 503
15.2 Hypothesis testing 504
15.3 Tests of significance for attributes 509
15.3.1 Tests for number of successes 510
15.3.2 Tests for proportion of successes 512
15.3.2.1 Characteristics of the sampling distribution of proportions 512
15.3.3 Tests for difference between proportions 514
15.4 Tests for significance of variables 516
15.4.1 Test of significance of mean 518
15.4.2 Test of significance of difference between two means 522
15.5 Illustrative problems 526
15.6 Test of significance of difference between two standard deviations 532
15.7 Review exercises 535
16. TEST OF SIGNIFICANCE: SMALL SAMPLES 539
16.1 Introduction 539
16.1.1 Brief history 541
16.1.2 Explanation 543
16.1.3 Statistical analysis 544
16.1.4 General procedure of t-test 546
16.1.5 Comparison of means 547
16.1.6 Determining type 548
16.2 Student's t-distribution 549
16.2.1 Student's t-distribution and normal distribution 550
16.3 Properties of t-distribution 552
16.4 Uses of t-distribution 553
16.5 Assumptions of student's t-test 554
16.6 Significance of t-test 555
16.7 Applications of t-distribution 556
16.7.1 The t-test for single mean 556

16.7.2 The t-test for different means 558
16.7.2.1 Independent samples 559
16.7.2.2 Dependent samples 564
16.7.2.3 Comparison of means of two samples by least significance difference (LSD) test 569
16.7.2.4 The t-test for correlation coefficient 570
16.8 Variance ratio rest: F-test 576
16.8.1 F-test and its applications 578
16.8.1.1 Testing the equality of population variances 579
16.8.1.2 Testing the significance of an observed correlation ratio 580
16.8.1.3 Testing the significance of an observed multiple correlation coefficient 581
16.8.1.4 Testing the non-linearity of regression 582
16.8.1.5 Testing the significance of a regression function 583
16.9 Illustrative problems 584
16.10 Review exercises 598
17. ANALYSIS OF VARIANCE 607
17.1 Introduction 607
17.2 Assumptions in analysis of variance 608
17.3 Techniques of analysis of variance 609
17.3.1 Analysis of variance in one-way classification (one-factor analysis) 610
17.3.1.1 The F-analysis by coding method 615
17.3.1.2 The F-analysis by missing data formula technique 617
17.3.1.3 Testing for significant differences between individual pair of means 618
17.3.2 Analysis of variance in two-way classification (two-factor analysis) 621
17.4 Illustrative problems 624
17.5 Review exercises 635
18. NONPARAMETRIC TESTS 643
18.1 Introduction 643
18.1.1 History and development 644
18.1.2 Brief summary of tests and their concepts 644
18.2 Assumptions : Parametric and nonparametric tests 645
18.3 Differences between parametric and nonparametric tests 646
18.4 Correspondence between parametric and nonparametric tests 646
18.5 Choice between parametric and nonparametric tests 647
18.6 Uses of nonparametric tests and their drawbacks 647
18.7 How to set a hypothesis in nonparametric tests 647
18.8 Advantages and disadvantages of nonparametric tests 648
18.9 Types of nonparametric tests 649
18.9.1 The sign test 649
18.9.1.1 The one sample sign test 651
18.9.1.2 The two sample sign test (Paired-sign test) 652
18.9.2 The Wilcoxon signed rank test 657

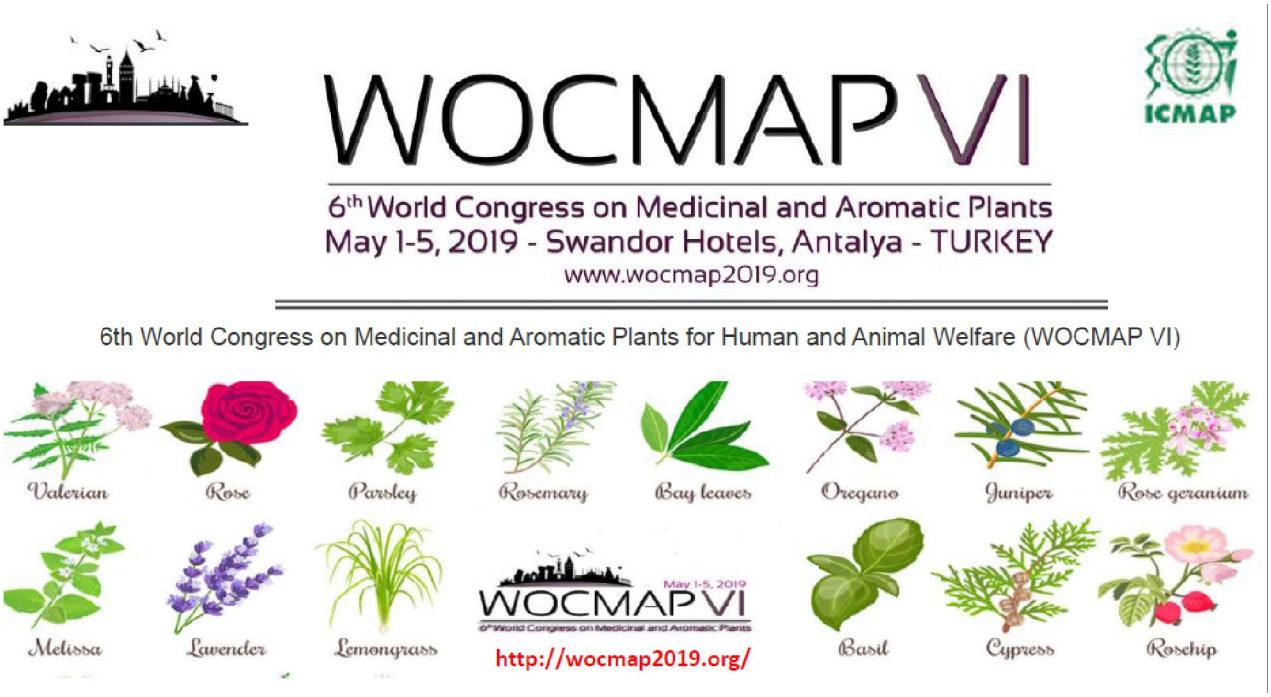
18.9.3 The Wilcoxon signed rank sum test 661
18.9.4 The Mann-Whitney U test 664
18.9.5 The Kruskat-Wallis H test 668
18.9.6 The Friedman test 672
18.10 Illustrative problems 674
18.11 Review exercises 693
19. STATISTICAL QUALITY CONTROL 701
19.1 Introduction 701
19.1.1 Meaning and definition 702
19.1.2 Brief history 703
19.1.3 Advantages 703
19.2 Types and causes of variation 704
19.2.1 Chance causes 704
19.2.2 Assignable causes 705
19.3 Types of quality control 705
19.3.1 Process control 706
19.3.2 Product control 706
19.4 Techniques used 706
19.5 Control charts 707
19.5.1 Control limits 709
19.5.2 Advantages of the use of a control chart 709
19.6 Types of control chart 709
19.6.1 Control charts for variables 710
19.6.1.1 Mean chart ($\overline{x}$-chart) 710
19.6.1.2 Control chart for range (R-chart) 713
19.6.1.3 Control charts for standard deviation (s or σ-chart) 716
19.7 Control charts for attributes 721
19.7.1 Control chart for fraction defective, *i.e.*, p-chart 722
19.7.2 Control chart for number of defective (np - chart) 724
19.7.3 Control chart for number of defects per unit (c-chart) 725
19.8 Acceptance sampling 727
19.8.1 Introduction 727
19.8.2 Meaning and technique 727
19.8.3 Sampling techniques 727
19. 9 Acceptance sampling plans 727
19.10 Sampling plans 729
19.10.1 Types of sampling plans 729
19.10.1.1 Single sampling plan 729
19.10.1.2 Double sampling plan 730
19.10.1.3 Sequential sampling plan 731

19.11 Operating characteristics curve or O.C. curve 732
19.12 Review exercises 734
20. DESIGN OF EXPERIMENTS 737
20.1 Introduction 738
20.2 Basic concepts of experimental design 739
20.3 Basic principles of experimental design 740
20.3.1 Replication 741
20.3.2 Randomization 742
20.3.3 Local control 743
20.3.4 Uniformity trial 744
20.3.5 Error control 744
20.3.5.1 Selection of experimental material 744
20.3.5.2 Size and shape of experimental units 745
20.3.5.3 Maximum curvature method 745
20.3.5.4 Fairfield Smith's variance law 746
20.4 Experimental designs 746
20.4.1 Completely randomized design (CRD) 748
20.4.1.1 Advantages and disadvantages of CRD 748
20.4.1.2 Layout of CRD 749
20.4.1.3 Analysis of variance 750
20.4.2 Randomized complete block design (RCBD) 755
20.4.2.1 Advantages and disadvantages of RCBD 756
20.4.2.2 Layout of RCBD 756
20.4.2.3 Analysis of variance 757
20.4.2.4 Missing observations in RCBD 760
20.4.2.5 Missing plot technique in RCBD 761
20.4.3 Latin square design (LSD) 764
20.4.3.1 Advantages and disadvantages of LSD 765
20.4.3.2 Layout of LSD 765
20.4.3.3 Analysis of variance 767
20.4.4 Factorial experiments 774
20.4.4.1 Advantages and disadvantages of factorial experiment 775
20.4.4.2 The 2^2 factorial experiment 775
20.4.4.3 Layout and analysis of variance 777
20.4.4.4 Yates' method of computing factorial effect totals 779
20.4.5 Confounding 786
20.4.5.1 The principle of confounding 787
20.4.5.2 The 2^3-factorial experiment with complete confounding 787
20.4.5.3 The 2^3-factorial experiment with partial confounding 793
20.4.5.4 The 2^4-factorial experiment 799
20.4.5.5 The 2^5-factorial experiment 800

20.4.5.6 The 2^6 factorial experiment 800
20.4.5.7 The 3^n-experiment 801
20.4.5.8 The 3^2-experiment 801
20.4.5.9 The 3^3-experiment 806
20.4.5.10 The 3^3-experiment in blocks of 9 plots each 808
20.4.5.11 Complete confounding in a 3^3-experiment using blocks of 9 plots each 809
20.4.5.12 Partial confounding in a 3^3-experiment using 4 replications of three blocks each 809
20.4.5.13 Fractional factorial design 810
20.4.6 Split-plot and strip-plot designs 816
20.4.6.1 Split-plot design 816
20.4.6.1.1 Advantages and disadvantages of split-plot design 817
20.4.6.1.2 Randomization and layout 817
20.4.6.1.3 Analysis of variance 818
20.4.6.2 Strip-plot design 824
20.4.6.2.1 Randomization and layout 824
20.4.6.2.2 Analysis of variance 825
ANNEXURES : TABLES (1 - 25) **835**
AUTHOR INDEX **862**
SUBJECT INDEX **868**

Dr. Irfan Ali Khan
UKAAZ PUBLICATIONS
16-11-511/D/408, Shalivahana Nagar,
Moosarambagh, Hyderabad-500036, Telangana State, India
Tel. : 040-24547392, 040-65704477, 9246509453, E-mail: ukaaz@yahoo.com
For any query or order, contact : Dr. Irfan Ali Khan
40% Discount for Institutions, Distributors and Individuals

International Conference



topics

May 1-5, 2019
WOCMAP VI
6th World Congress on Medicinal and Aromatic Plants

- **Biodiversity prospecting and ethnopharmacology** *Ben-Erik van Wyk, Thomas Efferth*
- **Herbal products for animal health and nutrition (HERBAN)** *Kobus Eloff, Chlodwig Franz*
- **Cultivation, collection, breeding and sustainability of MAPs** *Johannes Novak, Akos Mathe*
- **Production, phytochemistry, adulteration, quality control of phytomedicines, phytocosmetics, essential oils, natural volatiles and spices**-*Yoshinori Asakawa, Umesh Patil*
- **Botany, taxonomy, nomenclature and history of MAPs**-- *Ali A. Dönmez, Alain Touwaide*
- **Industrial processing of MAPs** *Atta-ur-Rahman, M. Iqbal Choudhary*
- **Therapeutical aspects, safety and efficacy, clinical trials of MAPs** *Gerhard Buchbauer*
- **Nutraceuticals, functional foods, novel foods and dietary supplements** *Stefan Gafner, Mark Blumenthal*
- **Marketing and trade of MAPs** *Denzil Phillips*
- **Laws and regulations, pharmacopoeial standards of MAPs** *Gerhard Franz*
- **Technology, biotechnology and innovations of MAPs** *Mahmoud A. ElSohly*
- **Traditional health systems, ethnomedicines** *Dean Guo, Alvaro Viljoen*
- **Marine natural products** Anake Kijjoa, D. Tasdemir
- **Other topics related to MAPs** *Salvador Canigueral, Umesh Patil*

IMPORTANT DATES
Abstract submission deadline: 15 September 2018
Acceptance Letters: 15 October 2018
Early bird registration: 1 November 2018

May 1-5, 2019
WOCMAP VI
6th World Congress on Medicinal and Aromatic Plants

Peer reviewed ABSTRACTS will be published in Phytomedicine (Elsevier)

WOCMAP VI
6th World Congress on Medicinal and Aromatic Plants

We look forward to meeting you on
1-5 May 2019 in Antalya, Turkey.

Thank you

International Conferences

The 5th International Mediterranean Symposium on Medicinal and Aromatic Plants : April 24-26, 2019

The 5th International Symposium on Pharmaceutical and Biomedical Sciences : April 26-28, 2019

INVITATION OF MESMAP-5 AND ISPBS-5

Medicinal and Aromatic Plants (MAPs) have growing interest throughout the world. These plants are also well-known as Non-wood Forest Products (NWFP). From nature to standardized products, all these plants and their products are of interest of a number of sectors. Thus, their market size has gradually increased. By huge development in this sector, scientific researches for supporting ethnobotanical heritage and investigating novel information. Governmental regulations for conservation biodiversity and protecting public health and private sector efforts to get a share from the market is increasing. Non-Governmental Organizations (NGOs) are working all the related areas for biodiversity conservation, sustainable use of natural resources, encourage for their cultivation, awareness of public for muggers and to encourage for multidisciplinary actions of all related sectors for human welfare. Thus, scientific-based organizations are important forums to bring together all the stakeholders in the MAP and/or NWFP sectors.

In this context, many, international symposia and meetings have been organized in order to share novel scientific data and solve the problems throughout the world. MESMAP symposium is one the most important scientific meeting with huge participants from all over the world. The first MESMAP meeting was organized in 2013 and four more successful symposia have been organised up to now. MESMAP symposia hosted more than 1500 participants from 60 different countries in earlier four meetings. Despite of the fact that the title of the International symposium contains “Mediterranean”, these big events welcome the participants from all climates on the world. We had many official and private sponsorships from Turkey and abroad. For example, **AMAPMED**-Mediterranean Association of Medicinal and Aromatic Plants, **AMAPSEEC**-East European Association of Medicinal and Aromatic Plants, **APTI**- Association of Pharmaceutical Teachers of India, **THY-Turkish Airlines**, Ministry of Food, Agriculture and Livestock, Ministry of Forestry and Water Affairs. After these symposia, selected papers were published in SPECIAL ISSUEs in Industrial Crops and Products (ELSEVIER), Indian Journal of Pharmaceutical Education and Research (IJPER) THOMSON ISI-Indexed Journals. **Annals of Phytomedicine: An International Journal (ESCI),** Journal of Pharmaceutical Research (JPR), International Journal of Agriculture, Environment and Food Sciences (JAEFS) and Current Perspectives on Medicinal and Aromatic Plants (CUPMAP).

The Fifth Mediterranean International Symposium on Medicinal and Aromatic Plants **(MESMAP-5)** will be organized at Dilek Kaya Hotel and Burcu Kaya Hotel in Ürgüp **(Cappadocia),** Nevsehir, Turkey, in **April 24-28, 2019**. MESMAP-5 scientific program covers all related aspects of MAPs and NWFPs such as agriculture and forestry, botany, ethnobotany, herbal medicines, plant biotechnology, phytopharmacology, pharmacognosy, plant biology, phytochemistry, and aromatherapy.

However, MESMAP-5 participants can also participate in **“The 5th International Symposium on Pharmaceutical and Biomedical Sciences (ISPBS-5)”** as joint meeting. ISPBS symposium was first organized in Japan with Turkish and Japanese Universities’ Scientific Collaborations in 2016 and the first name of the symposium was JATUSPAB (Japan-Turkey International Symposium on Pharmaceutical and Biomedical Sciences). Because of the huge response from different countries, the International Organizing Committee have decided to change the name of this symposium as “International Symposium on Pharmaceutical and Biomedical Sciences”.

Selected papers will be evaluated for publication in some international journals like **Annals of Phytomedicine: An International Journal (ESCI),** Journal of Pharmaceutical Research (JPR), International Journal of Agriculture, Environment and Food Sciences (JAEFS) and Current Perspectives on Medicinal and Aromatic Plants (CUPMAP). Symposium details are given at www.mesmap.com

Now, we are proud of organizing these scientifically accepted big two events, **MESMAP-5 and ISPBS-5**, as a joint meeting at one of”**the most extraordinary natural and historical wonders in the world; CAPPADOCIA**, TURKEY”.

SYMPOSIUM TOPICS FOR MESMAP-5

- Agricultural Practices of MAPs
- Aromatherapy, Phytotheraphy and Phytochemistry
- Biology, Biochemistry and Biotechnology
- Biodiversity
- Botany, Ethnobotany and Ethnopharmacology
- Conservation, Management and Sustainable Uses of MAPs and NWFPs
- Essential Oils and Secondary Plant Metabolites
- Herbal and Traditional Medicines
- Industrial Processing Technologies of MAPs
- Legislations on MAPs and NWFPs
- Literature on MAPS
- Marketing of MAPs and Products
- Natural Cosmetics
- Non-Governmental and Non-Profit Organizations (NGO and NPO) on MAPs
- Standardization and Quality of MAP Products
- Traditional and Modern Herbal Products
- Pharmacognosy
- Phytopharmacology and Toxicology

SYMPOSIUM TOPICS FOR ISPBS-5

- AIDS/HIV Research
- Antiretroviral Therapy (ART)
- Aromatherapy, Phytoteraphy and Phytochemistry
- Biology, Biochemistry and Biotechnology
- Biodiversity
- Biosensors and Bioelectronics
- Botany, Ethnobotany and Ethnopharmacology
- Conservation, Management and Sustainable Uses of MAPs and NWFPs
- Design and Discovery of Novel Biologically Active Compounds
- Drug Delivery System
- Essential Oils and Secondary Plant Metabolites
- Herbal and Traditional Medicines
- Industrial Processing Technologies of MAPs
- Legislations on MAPs and NWFPs
- Literature on MAPS
- Marketing of MAPs and Products
- Bioorganic Medicinal Chemistry
- Molecular Cancer Therapeutics
- Molecular Modeling and Simulations
- Natural Cosmetics
- Non-Governmental and Non-Profit Organizations (NGO and NPO) on MAP
- Photodynamic Therapy
- Retroviruses
- Standardization and Quality of MAP Products
- Traditional and Modern Herbal Products
- Pharmacognosy
- Phytopharmacology and Toxicology
- Structural Biology

To be in Cappadocia, in the best season in Cappadocia, for this distinguished scientific event will be an amazing experience for you and good memories to take back your home.We would like to wish you all the best and are already looking forward to meeting you in Cappadocia, Turkey, in 2019 spring.

All the best,

Professor NAZIM SEKEROGLU, Ph.D
Chairman of MESMAP Symposiums
President of AMAPMED
General Coordinator of GOFMAP
www.nazimsekeroglu.com

Dean of Agricultural Faculty
Professor on Medicinal and Aromatic Plants
Food Engineering Department
Faculty of Engineering and Architecture
Kilis 7 Aralik University-79000,
Kilis-TURKEY

Phone : +90 3488142667/F:+90 3488142669
Cell : +90 5324015512
E-mail : nsekeroglu@gmail.com
f : https://tr-tr.facebook.com/public/Naz%C4%B1m-%C5%9Eekero%C4%9Flu
t : https://mobile.twitter.com/nazimsekeroglu
in : https://tr.linkedin.com/in/nazim-sekeroglu-17957628
RG :https://www.researchgate.net/profile/Nazim_Sekeroglu

International Conference

Main Topics

- Clinical research: Pharmacokinetics, pharmacodynamics, pharmaco-genomics and pharmacovigilance.
- Recent strategies in drug synthesis and analysis.
- Biotechnology: molecular, genomics and proteomics, bioinformatics, industrial biotechnology.
- Nanotechnology based drug delivery systems.
- Advances in Botanical Drugs discovery and separation.
- Clinical and forensic Toxicology.
- Novel Drugs used in Chest Diseases.
- Novel Drugs used in treatment of hepatobiliary diseases.
- Novel Drugs used in GIT Diseases.
- Novel Drugs Used in nephrology.
- New Stratigies for Cancer Treatment.
- Advances in Treatment of Diabetes.
- Novel Drugs used in cardiology.
- Advances in pediatrics.

Scope

The main aim of the conference is to create distinguished links among the researchers in the Pharmaceutical Sciences from universities, pharma-ceutical industry and hospitals.

NB. submitted abstracts should be in all pharmaceutical research areas.

First International Pharmaceutical Sciences Conference

"Drug Development: From Benchside To Bedside"

Menoufia, Egypt,

August,11th – 12th , 2018

Organized by

Faculty of Pharmacy

Under the Auspice of

Prof. Meawad M. Elkholy

President of Menoufia University

Honorary President

Prof. Ahmed F. Elkased

Vice President of Menoufia University For Postgraduate Studies and Research

Prof. Wafaa A. Zahran

Dean of Faculty of Pharmacy

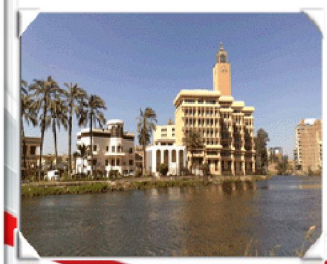
Dr. Hytham M. Ahmed

Secretary General and Vice Dean for Postgraduate Studies and Research

Menoufia University

Menoufia University (MU) was founded in 1976. It started with four faculties with nearly 9500 students, 214 staff members and 372 assisting members. It has steadily and remarkably developed to be one of the largest universities in Egypt. Today the university includes 22 faculties & institutes with about 80000 students and 3500 teaching staff members. The university had two campuses. The main campus is located in Shebin EL-koum, the capital of Menoufia Governorate, which is 75 Km north of Cairo. The other branch was located in Sadat City, 60 Km from Shebin EL-koum, & 90 Km from Cairo.

This branch is now separated as an independent University called" Sadat city University"



Registration Fees

Egyptians

Registration type:	Early 30/6/2018	Late 30/6/2018
Academic	350 L.E	450 L.E
Non- academic	100 L.E	150 L.E
Student	100 L.E	150 L.E
Accompanying - Person	50 L.E	50 L.E

Money deposit at:

Central bank of Egypt

Account number: (9/450/87937/4)

Non-Egyptian

Registration type:	Early 30/6/2018	Late 30/6/2018
Participant	$200	$250
Student	$100	$150
Accompanying-person	$50	$100

Money deposit at:

Arab African international bank

Account number: (6 003364021)

Consolidated Treasury Account (4/082/7754/46)

- The registration fees cover the scientific meeting, lunches, closing banquet, excursions, providing transportation

Please complete the application form: https://bit.ly/2pVLrS6 and send back the scanned payment receipt to Secretary General

Dr. Hytham M. Ahmed

Secretary General and Vice Dean for Postgraduate Studies & Research

BY e-mail

pharmacy_conferences@menofia.edu.eg

before

1st August 2018

For more information:

Mobile: 002 01004844589

002 01028725866

Website:

www.menofia.edu.eg/pharm/Conference/festalHome/en

*Venue: Menoufia University Hotel

NB. There will be a free transportation from Cairo / Alexandria / Tanta / Mansoura through university buses to the conference.

International Conference

WORLD CONGRESS ON AGRICULTURE, PLANT SCIENCE AND GENOMICS

Event to be held at the following time, date, and location:
Friday, November 23, 2018 at 10:00 a.m.
- to -
Saturday, November 24, 2018 at 6:00 PM (Indochina Time Thailand Time)
AVANI Atrium
1880 New Petchaburi Rd, Khwaeng Bang Kapi, Khet Huai Khwang, 10310, Thailand
Bangkok-10310, Thailand

Dear Dr.

We are pleased to invite you to attend for the "World Congress on Plant Science and Genomics", which is being organized duringNovember 23-24, 2018 at Bangkok, Thailand.

Plant Science Congress 2018 will lay a platform for making a good network with researchers and scholars from both academia and industry from all six continents and aims to accelerate scientific discoveries and major milestones in Plant Science and Genomics with a theme"Unfolding Scientific Research on Plant Genomics".

For more details visit link: Plant Science Congress 2018
We appreciate your time and look forward to hearing from you at the earliest.

With Regards,
kate Magnus | Program Manager
Plant Science Congress 2018

International Conference

Dear Colleague

Wishes from Euro Tychonix Biotech2018,

On behalf of Advisory Committe It's a great honor for me to Invite you as a Speaker

International Colloquiums on Biotechnology & Biomedical Engineering

On: November 14th – 16th | Venue: Rome, Italy

For More Information & Scientific Sessions kindly follow

http://tychonixinternational.org/biotech/

For further queries kindly feel free to ask I will be happy to assist you waiting for your reply

Email : colloquiums@tychonix.org

Respectfully,
Tychonix Group
+91 8886 431 401, +1(657)333-0760

Tychonix Biotech 2018

International Colloquium on Biotechnology and Biomedical Engineering
Rome , Italy from Nov 14th to 16th

Welcome to the International Colloquium on Biotechnology and Biomedical Engineering which is scheduled to be held from 14th – 16th November 2018 in Rome, Italy., Tychonix Biotech 2018 will address a range of critically important areas and new research in relation to Biotechnology and Biomedical.

World Congress on Biotechnology plans to create a global platform to Researchers, delegates, scientists, experts, scholars, sponsors, and graduates from all over the globe to consider how we can utilize novel trends and innovations in Biotechnology & Biomedical to meet the global challenges.

We invite you to join us at Biotechnology Conference for presentations, symposia, lectures and workshops. We assure you that you will gain a professionally rewarding experience by converse with other researchers from other institutions.

We look forward to meeting you in Rome, Italy!!!

https://tychonixinternational.org/biotech/
colloquiums@tychonix.org
discover@tychonixpublishinggroup.org

+91 - 8886 431 401, +1(657)333-0760

M S Swaminathan
Indian Father of Green Revolution
Founder Chairman - M S Swaminathan Research Foundation
Third Cross Street, Taramani Institutional Area
Chennai - 600 113

LIST OF BOOKS AUTHORED/EDITED : UKAAZ PUBLICATIONS

Series 1: Biostatistics

1. **FUNDAMENTALS OF BIOSTATISTICS: Fifth Revised Edition**
   ISBN 81-900441-0-9: 2018, Pages XXIV + 878 Crown Size Rs.650/-
2. **BIOSTATISTICS FOR PHARMACY**
   ISBN 81-88279-45-5: 2007, Pages VIII + 456 Crown Size Rs.270/-
3. **BIOSTATISTICS METHODS IN AGRICULTURE, BIOLOGY AND MEDICINE**
   ISBN 81-88279-49-8: 2007, Pages XXVI + 635 Crown Size Rs.370/-

Series 2: Medicinal and Aromatic Plants

4. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-1**
   ISBN 81-900441-3-3 YEAR : 1998 HARDBOUND PAGES: VIII + 319 CROWN SIZE Rs. 750/-
5. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-2**
   ISBN 81-900441-9-2 YEAR : 1999 HARDBOUND PAGES: VIII + 510 CROWN SIZE Rs. 1250/-
6. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-3**
   ISBN 81-900441-7-6 YEAR : 2000 HARDBOUND PAGES: VIII + 393 CROWN SIZE Rs. 1050/-
7. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-4**
   ISBN 81-900441-5-X YEAR : 2000 HARDBOUND PAGES: VIII + 320 CROWN SIZE Rs. 1050/-
8. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-5**
   ISBN 81-900441-6-8 YEAR : 2002 HARDBOUND PAGES: VIII + 233 CROWN SIZE Rs. 950/-
9. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-6**
   ISBN 81-900441-00-5 YEAR : 2002 HARDBOUND PAGES: VIII + 288 CROWN SIZE Rs. 1050/-
10. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-7**
    ISBN 81-88279-07-2 YEAR : 2003 HARDBOUND PAGES: VIII + 285 CROWN SIZE Rs. 1050/-
11. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-8**
    ISBN 81-88279-08-9 YEAR : 2003 HARDBOUND PAGES: VIII + 269 CROWN SIZE Rs. 1050/-
12. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-9**
    ISBN 81-88279-09-9 YEAR : 2003 HARDBOUND PAGES: VIII + 277 CROWN SIZE Rs. 1050/-
13. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-10**
    ISBN 81-88279-11-0 YEAR : 2004 HARDBOUND PAGES: VIII + 286 CROWN SIZE Rs. 1050/-
14. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-11**
    ISBN 81-88279-14-5 YEAR : 2004 HARDBOUND PAGES: VIII + 295 CROWN SIZE Rs. 1050/-
15. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-12**
    ISBN 81-88279-16-1 YEAR : 2004 HARDBOUND PAGES: VIII + 300 CROWN SIZE Rs. 1050/-
16. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-13**
    ISBN 81-88279-26-9 YEAR : 2005 HARDBOUND PAGES: VIII + 295 CROWN SIZE Rs. 1050/-
17. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-14**
    ISBN 81-88279-38-2 YEAR : 2006 HARDBOUND PAGES: VIII + 320 CROWN SIZE Rs. 1050/-
18. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-15**
    ISBN 81-88279-39-0 YEAR : 2007 HARDBOUND PAGES: VIII + 304 CROWN SIZE Rs. 1050/-
19. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-16**
    ISBN 81-88279-40-4 YEAR : 2007 HARDBOUND PAGES: VIII + 287 CROWN SIZE Rs. 1050/-
20. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-17**
    ISBN 81-88279-41-2 YEAR : 2007 HARDBOUND PAGES: VIII + 286 CROWN SIZE Rs. 1050/-
21. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-18**
    ISBN 81-88279-48-X YEAR : 2007 HARDBOUND PAGES: VIII + 295 CROWN SIZE Rs. 1050/-
22. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-19**
    ISBN 81-88279-52-8 YEAR : 2008 HARDBOUND PAGES: VIII + 286 CROWN SIZE Rs. 1050/-
23. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-20**
    ISBN 81-88279-53-6 YEAR : 2008 HARDBOUND PAGES: VIII + 311 CROWN SIZE Rs. 1050/-
24. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-21**
    ISBN 81-88279-58-7 YEAR : 2009 HARDBOUND PAGES: VIII + 296 CROWN SIZE Rs. 1050/-
25. **ROLE OF BIOTECHNOLOGY IN MEDICINAL AND AROMATIC PLANTS: VOLUME-22**
    ISBN 81-88279-60-9 YEAR : 2009 HARDBOUND PAGES: VIII + 319 CROWN SIZE Rs. 1050/-
26. **MEDICINAL AND AROMATIC PLANTS OF INDIA**
    ISBN 81-88279-24-2 YEAR : 2005 HARDBOUND PAGES: VIII + 295 DEMI SIZE Rs. 650/-

Series 3: Bioinformatics

27. **EMERGING TRENDS IN BIOINFORMATICS**
    ISBN 81-900441-4-1 YEAR : 2002 HARDBOUND PAGES: VIII + 297 CROWN SIZE Rs. 950/-
28. **FUNDAMENTALS OF BIOINFORMATICS**
    ISBN 81-88279-06-4 YEAR : 2003 HARDBOUND PAGES: VIII + 229 CROWN SIZE Rs. 950/-
29. **ESSENTIALS OF BIOINFORMATICS**
    ISBN 81-88279-12-9 YEAR : 2003 HARDBOUND PAGES: VIII + 279 CROWN SIZE Rs. 950/-
30. **RECENT ADVANCES IN BIOINFORMATICS**
    ISBN 81-88279-02-1 YEAR : 2003 HARDBOUND PAGES: VIII + 350 CROWN SIZE Rs. 950/-
31. **INTRODUCTORY BIOINFORMATICS**
    ISBN 81-88279-13-7 YEAR : 2004 HARDBOUND PAGES: VIII + 348 CROWN SIZE Rs. 650/-
32. **BASIC CONCEPTS OF BIOINFORMATICS**
    ISBN 81-88279-01-3 YEAR : 2005 HARDBOUND PAGES: VIII + 303 CROWN SIZE Rs. 850/-
33. **BIOINFORMATICS (1)**
    ISBN 81-88279-62-5 YEAR : 2010 PAPERBACK PAGES: XVI + 352 CROWN SIZE Rs. 245/-
34. **BIOINFORMATICS (2)**
    ISBN 81-88279-63-3 YEAR : 2010 PAPERBACK PAGES: XVI + 359 CROWN SIZE Rs. 245/-
35. **BIOINFORMATICS (3)**
    ISBN 81-88279-64-1 YEAR : 2010 PAPERBACK PAGES: XVI + 367 CROWN SIZE Rs. 245/-
36. **BIOINFORMATICS (4)**
    ISBN 81-88279-65-X YEAR : 2010 PAPERBACK PAGES: XVI + 408 CROWN SIZE Rs. 270/-
37. **COMPUTER APPLICATIONS IN PHARMACEUTICAL SCIENCES**
    ISBN 81-88279-68-4 YEAR : 2010 PAPERBACK PAGES: XXIV + 499 CROWN SIZE Rs. 270/-
38. **FUNDAMENTALS OF INFORMATION TECHNOLOGY: THEORY AND PRACTICALS**
    ISBN 81-88279-61-7 YEAR : 2009 PAPERBACK PAGES: XVI + 494 CROWN SIZE Rs. 270/-

Series 4: Herbal Medicine for Human Diseases

39. **HERBAL MEDICINE FOR HUMAN DISEASES: VOLUME-I**

ISBN 81-88279-22-6 YEAR : 2005 HARDBOUND PAGES: VIII + 332 CROWN SIZE Rs. 950/-

40. **HERBAL MEDICINE FOR HUMAN DISEASES: VOLUME-II**

ISBN 81-88279-25-0 YEAR : 2005 HARDBOUND PAGES: VIII + 279 CROWN SIZE Rs. 950/-

41. **HERBAL MEDICINE FOR HUMAN DISEASES: VOLUME-III**

ISBN 81-88279-42-0 YEAR : 2007 HARDBOUND PAGES: VIII + 304 CROWN SIZE Rs. 950/-

42. **HERBAL MEDICINE FOR HUMAN DISEASES: VOLUME-IV**

ISBN 81-88279-55-2 YEAR : 2008 HARDBOUND PAGES: VIII + 296 CROWN SIZE Rs. 950/-

Series 5: Herbal Therapy for Diabetes

43. **HERBAL THERAPY FOR DIABETES: VOLUME-I**

ISBN 81-88279-21-8 YEAR : 2005 HARDBOUND PAGES: VIII + 318 CROWN SIZE Rs. 950/-

44. **MODERN AND ALTERNATIVE MEDICINE FOR DIABETES**

ISBN 81-88279-27-7 YEAR : 2005 HARDBOUND PAGES: VIII + 288 CROWN SIZE Rs. 950/-

45. **ANTIDIABETIC PLANTS OF INDIA**

ISBN 81-88279-03-X YEAR : 2005 HARDBOUND PAGES: VIII + 265 DEMI SIZE Rs. 650/-

Series 6: Ethnomedicine

46. **ETHNOMEDICINE AND HUMAN WELFARE: VOLUME-I**

ISBN 81-88279-15-3 YEAR : 2004 HARDBOUND PAGES: VIII + 318 CROWN SIZE Rs. 850/-

47. **ETHNOMEDICINE AND HUMAN WELFARE: VOLUME-II**

ISBN 81-88279-17-X YEAR : 2005 HARDBOUND PAGES: VIII + 310 CROWN SIZE Rs. 850/-

48. **ETHNOMEDICINE AND HUMAN WELFARE: VOLUME-III**

ISBN 81-88279-18-8 YEAR : 2005 HARDBOUND PAGES: VIII + 305 CROWN SIZE Rs. 850/-

49. **ETHNOMEDICINE AND HUMAN WELFARE: VOLUME-IV**

ISBN 81-88279-29-3 YEAR : 2005 HARDBOUND PAGES: VIII + 291 CROWN SIZE Rs. 850/-

Series 7: Herbal Therapy for Different Human Diseases

50. **HERBAL THERAPY FOR HUMAN DISEASES**

ISBN 81-88279-28-5 YEAR : 2007 HARDBOUND PAGES: VIII + 237 DEMI SIZE Rs. 350/-

51. **HERBAL THERAPY FOR AIDS**

ISBN 81-88279-47-1 YEAR : 2007 HARDBOUND PAGES: VIII + 348 DEMI SIZE Rs. 350/-

52. **HERBAL THERAPY FOR DIABETES**

ISBN 81-88279-46-3 YEAR : 2007 HARDBOUND PAGES: VIII + 430 DEMI SIZE Rs. 350/-

53. **HERBAL THERAPY FOR ASTHAMA**

ISBN 81-88279-50-1 YEAR : 2008 HARDBOUND PAGES: VIII + 416 DEMI SIZE Rs. 600/-

54. **HERBAL THERAPY FOR CANCER**

ISBN 81-88279-54-4 YEAR : 2008 HARDBOUND PAGES: VIII + 417 DEMI SIZE Rs. 650/-

55. **HERBAL THERAPY FOR ARTHRITIS**

ISBN 81-88279-51-X YEAR : 2008 HARDBOUND PAGES: VIII + 462 DEMI SIZE Rs. 650/-

56. **HERBAL THERAPY FOR AGEING**

ISBN 81-88279-58-7 YEAR : 2009 HARDBOUND PAGES: VIII + 248 DEMI SIZE Rs. 450/-

57. **HERBAL THERAPY FOR DIARRHOEA AND DYSENTERY**

ISBN 81-88279-56-0 YEAR : 2009 HARDBOUND PAGES: VIII + 162 DEMI SIZE Rs. 450/-

58. **HERBAL THERAPY FOR SKIN AFFLICTIONS**

ISBN 81-88279-59-5 YEAR : 2009 HARDBOUND PAGES: VIII + 304 DEMI SIZE Rs. 450/-

Series 8: Biotechnology

59. **BIOTECHNOLOGY IN THE WELFARE OF MANKIND: VOLUME-I**

ISBN 81-88279-28-5 YEAR : 2005 HARDBOUND PAGES: VIII + 286 CROWN SIZE Rs. 650/-

ISBN 81-88279-28-5 YEAR : 2005 PAPERBACK PAGES: VIII + 286 CROWN SIZE Rs. 300/-

60. **BIOTECHNOLOGY IN THE WELFARE OF MANKIND: VOLUME-II**

ISBN 81-88279-23-4 YEAR : 2005 HARDBOUND PAGES: VIII + 288 CROWN SIZE Rs. 650/-

ISBN 81-88279-23-4 YEAR : 2005 PAPERBACK PAGES: VIII + 288 CROWN SIZE Rs. 300/-

61. **MEDICAL BIOTECHNOLOGY**

ISBN 81-88279-31-5 YEAR : 2006 HARDBOUND PAGES: VIII + 340 DEMI SIZE Rs. 650/-

ISBN 81-88279-31-5 YEAR : 2006 PAPERBACK PAGES: VIII + 340 DEMI SIZE Rs. 300/-

62. **BASIC CONCEPTS OF BIOTECHNOLOGY**

ISBN 81-88279-33-1 YEAR : 2006 PAPERBACK PAGES: VIII + 292 DEMI SIZE Rs. 295/-

63. **ESSENTIALS OF BIOTECHNOLOGY**

ISBN 81-88279-32-3 YEAR : 2006 PAPERBACK PAGES: VIII + 299 DEMI SIZE Rs. 295/-

64. **ADVANCES IN BIOTECHNOLOGY**

ISBN 81-88279-34-X YEAR : 2006 PAPERBACK PAGES: VIII + 298 DEMI SIZE Rs. 295/-

65. **MODERN CONCEPTS IN BIOTECHNOLOGY**

ISBN 81-88279-36-6 YEAR : 2006 PAPERBACK PAGES: VIII + 289 DEMI SIZE Rs. 295/-

66. **EMERGING TRENDS IN BIOTECHNOLOGY**

ISBN 81-88279-35-8 YEAR : 2006 PAPERBACK PAGES: VIII + 290 DEMI SIZE Rs. 295/-

67. **NEW FRONTIERS IN BIOTECHNOLOGY**

ISBN 81-88279-37-4 YEAR : 2006 PAPERBACK PAGES: VIII + 290 DEMI SIZE Rs. 295/-

Series 9: Molecular Genetics

68. **FUNDAMENTALS OF BIOTECHNOLOGY, FORENSIC SCIENCE AND GENETIC ENGINEERING**

ISBN 81-88279-04-8 YEAR : 2004 HARDBOUND PAGES: VIII + 390 CROWN SIZE Rs. 500/-

69. **FUNDAMENTALS OF MOLECULAR BIOLOGY, GENETIC ENGINEERING AND BIOTECHNOLOGY**

ISBN 81-88279-10-2 YEAR : 2004 HARDBOUND PAGES: VIII + 365 CROWN SIZE Rs. 500/-

70. **FUNDAMENTALS OF GENE, GENOMICS AND GENETIC ENGINEERING**

ISBN 81-88279-05-6 YEAR : 2004 HARDBOUND PAGES: VIII + 465 CROWN SIZE Rs. 650/-

Series 10: Limnology

71. **LIMNOLOGY IN THE INDIAN SUBCONTINENT**

ISBN 81-88279-19-6 YEAR : 2005 HARDBOUND PAGES: XVI + 327 DEMI SIZE Rs. 750/-

ISBN 81-88279-19-6 YEAR : 2005 PAPERBACK PAGES: XVI + 327 DEMI SIZE Rs. 350/-

Series 11: Fruits, Vegetables and Spices

72. **LEAFY VEGETABLES**

ISBN 81-88279-20-X YEAR : 2005 PAPERBACK PAGES: IV + 177 DEMI SIZE Rs. 250/-

73. **PHARMACEUTICAL WEALTH OF FRUITS, VEGETABLES AND SPICES**

ISBN 81-88279-44-7 YEAR : *2007 HARDBOUND PAGES: VIII + 266 DEMI SIZE Rs. 350/-*

Series 12: General Books

74. **GENETIC IMPROVEMENT OF OILSEED CROPS**

ISBN 81-900441-1-7 YEAR : 1996 HARDBOUND PAGES: VIII + 374 DEMI SIZE Rs. 500/-

75. **ROLE OF BIOTECHNOLOGY IN PULSE CROPS**

ISBN 81-900441-2-5 YEAR : 1996 HARDBOUND PAGES: VIII + 223 DEMI SIZE Rs. 400/-

76. **GENETICS AND BREEDING STRATEGIES IN THE IMPROVEMENT OF PULSE CROPS**

ISBN 81-900441-3-3 YEAR : 1998 HARDBOUND PAGES: VIII + 353 DEMI SIZE Rs. 450/-

77. **FRONTIERS IN PLANT SCIENCE**

YEAR : 1997 HARDBOUND PAGES: VIII + 1043 CROWN SIZE Rs. 950/-