

Veterinary Laboratory Diagnosis

2nd Revised and Enlarged Edition

The book *Veterinary Laboratory Diagnosis* is meant for students of veterinary sciences, field veterinarians, diagnosticians and teachers. There are 28 chapters in this book covering almost all the aspects of diagnosis including blood, urine, faeces, CSF, synovial fluid, milk, serum, skin scrapings and bone marrow examination using latest generation technologies. Various immunological tests are described which can be carried out under Indian conditions for confirmatory diagnosis of diseases. The methods of collection, preservation and dispatch of the clinical specimens are described specially under field conditions. A chapter on cytopathology and biopsy is included which will be helpful in diagnosis of cancer and other ailments of animals. Histopathological examination is described to diagnose the diseases when there is only formalin fixed clinical specimens are available. Various immunopathological techniques like immunoperoxidase, avidin biotin complex assay, PAP techniques, etc. are described for confirmatory diagnosis of diseases of animals and poultry. All the techniques are supported with photographs or line drawings to make them more understandable. In second edition, new chapters on Diagnosis of TB, JD and STDs; laboratory safety, certifications of ISO 9001: 2000, ISO 17025 and GLP and Biosafety levels are included for the benefit of readers, which may not be available in other books of laboratory diagnosis.

The book is useful to the students of BVSc & AH in Veterinary Laboratory Diagnosis (VLD) course during 4th and 5th year of their course programme. Most routinely observed problems and commonly asked questions are given with each chapter for self assessment. It will be quite useful book for them.

Prof. R.S. Chauhan is currently Joint Director (CADRAD), IVRI, Izatnagar (UP). He has worked as National Fellow, Associate Professor, Assistant Professor in CCS HAU, Hisar and GB Pant University, Pantnagar. He reported many disease conditions in animals and isolated camel pox virus for the first time in India. He has more than 700 publications to his credit that have appeared in various national and international journals of repute. He has authored more than 30 books including textbooks on Veterinary Pathology, Laboratory Diagnosis, Glossary, Manuals and Monographs. He was awarded with various national awards including Young Scientist Award, IAAVR Award, Shri Ram Lal Agrawal National Award, Dr. K.S. Nair Memorial Award, Dr. Rajendra Prasad Award of ICAR, Best Teacher Award of GB Pant University, etc. He has been widely travelled and attended several international conferences and visited Kenya, UAE, Egypt, France, UK, The Netherlands, Canada, and Germany. He is Fellow of National Academy of Veterinary Sciences, Indian Association of Veterinary Pathologists and Society for Immunology and Immunopathology. He is also heading "Society for Immunology and Immunopathology" as Secretary-General. He is President of The Cow Therapy Society and Vice-President of the Indian Association of Veterinary Educators. Earlier he has been in executive committee member of IAAVR, Joint Secretary, Indian Virology Society and Zonal Secretary, Indian Association of Veterinary Pathologists. He is Managing-Editor of the *Journal of Immunology and Immunopathology*, Editor in Chief of the *International Journal on Cow Science*, Chief Editor of *Indian Journal of Veterinary Pathology* and Editor of *The Indian Cow*. Dr. Chauhan has been awarded with "Gopal Gaurav", Bharat Excellence and "Glory of India" awards. He became founder President of "Dr. J.L. Vegad Foundation", developing multimedia CDs for learning Pathology.

Dr. Dinesh Chandra, Senior Scientist is currently working in Parasitology Laboratory of CADRAD. He is working in disease investigation area since 1990. He investigated several outbreaks and reported particularly parasitic diseases. He has more than 100 publications to his credit. He has also written a Manual of Parasitic Disease Investigation. Author is also involved currently in teaching at postgraduate and doctoral level. He is regularly involved in providing training programmes. He is life member of various scientific societies/ associations and regarded as a high profile disease investigator.



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Tel. : 91-522-2209542, 2209543, 2209544, 2209545
Fax : 91-522-4045308; E-mail : ibdcc@airtelbroadband.in

Jacket Design : Dot & Line, Tel. : 91-522-2262417, 3019417



ISBN: 81-8189-212-7

Pri IBDC 200

2475-10

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9788181892125
336.089 607 CHAN
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Published by
INTERNATIONAL BOOK DISTRIBUTING CO.
(Publishing Division)
Khushnuma Complex Basement
7, Meerabai Marg (Behind Jawahar Bhawan)
Lucknow 226 001 U.P. (INDIA)
Tel. : 91-522-2209542, 2209543, 2209544, 2209545
Fax : 0522-4045308
E-Mail : ibdco@airtelbroadband.in

First Edition 2003
Second Revised and Enlarged Edition 2007

Price: Rs.
ISBN 81



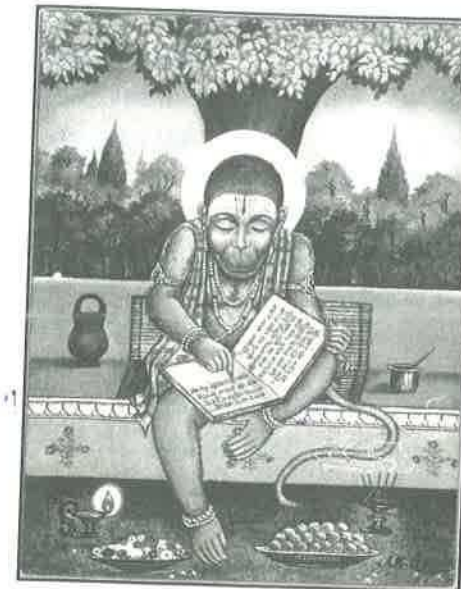
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Composed & Designed at :
Panacea Computers
3rd Floor, Agrawal Sabha Bhawan
Subhash Mohal, Sadar Cantt. Lucknow-226 002
Phone : 0522-2483312, 9335927082, 9452295008
E-mail : prasgupt@rediffmail.com

Printed at:
Salasar Imaging Systems
C-7/5, Lawrence Road Industrial Area
Delhi - 110 035
Tel. : 011-27185653, 9810064311

345



Dedicated
to
Anjani Nandan
Pavansut Lord Hanumanji

PREFACE TO THE SECOND EDITION

The importance of laboratory diagnosis increased manifold during last couple of years due to emergence and re-emergence of various infectious and contagious diseases in animals. The occurrence of new diseases in animals and poultry also created havoc in the society, particularly of those having zoonotic importance. Recent outbreak of avian influenza in Maharashtra and glanders in Maharashtra, UP, Uttarakhand states alarmed not only the veterinarian and medicos but the entire administration and economic machinery of the country, resulting in establishment of Biosafety level-3 and -4 laboratory in the country. Simultaneously, there is great need of authentic, reliable, precise and scientifically validated diagnostic reports which can only be generated by the certified laboratories having competence in the desired area. In the second edition of the book, all necessary amendments, additions are made to provide precise knowledge of biosafety levels-1, 2, 3, and 4; management of laboratory, its certification and requirements in the changing scenario. One chapter has been included on laboratory safety, precautions and safety signs to make the readers aware so that they may take prevention and corrective measures during any eventuality. Besides, a chapter on diagnosis of TB, JD and Sexually Transmissible Diseases (STDs) was also added which is the need of hour as Govt. of India and various state Governments/ Livestock Development Boards, are using animals for breeding purpose only after they tested negative for these diseases. At undergraduate and postgraduate levels, such valuable information may not be available in other text book which is very pertinent now a days. As such, it will be useful to the students, veterinarians, disease diagnosticians, teachers, laboratory workers, etc. and all those who are interested to establish a certified biosafety level diagnostic laboratory in the country. As far as the diagnostic laboratories dealing with clinical specimens are concerned, they require ISO 17025 certification while non-clinical testing laboratories (in house) require GLP certification. Such detailed information is available in

this book. Hopefully, it will find a place in rack of each and every veterinarian engaged in disease investigation process.

Authors are thankful to all those contributed directly or indirectly for the preparation of this second edition of the book particularly Mr. T. Khan deserves appreciation for typesetting.

**RS Chauhan
D Chandra**

PREFACE TO THE FIRST EDITION

Diagnosis is an important tool for the treatment and control of animal diseases. Unlike human beings, animals can't describe their symptoms and lesions which vary widely in their reaction. Since the beginning it has always been a challenge for the Veterinarian to make an efficient and timely diagnosis of animal diseases which solely depends upon this professional expertise. Main objective in preparing this book is to introduce veterinary students to those aspects of diagnosis that they will find useful in their careers and to provide them, as veterinarians, with a practical reference. The book will be beneficial not only to veterinary students and field veterinarians but also to teachers and researchers dealing with animal diseases.

The Veterinary Laboratory Diagnosis (VLD) course is included in Veterinary Council of India (VCI) syllabus which is being studied continuously in two semesters of B.V.Sc. & A.H. programme. This book has been prepared as per the VCI syllabus and is divided in 20 chapters including immunological, serological, molecular biological, microbiological toxicological and histopathological techniques. A chapter on cytopathology has been included which describes biopsy, exfoliative cytology and their role in diagnosis. The characteristic clinical signs and pathological lesions of each and every disease have been enlisted in tabular form to make them more understandable, which will be very much useful to veterinarians in making the diagnosis. In the last, multiple choice questions are also given for self assessment of the students. Overall this book provides sufficient information regarding laboratory diagnosis of animal and poultry diseases. Besides the undergraduate students, it will be useful to the teachers, field veterinarian, scientists, postgraduate researchers and disease investigation workers in their day to day laboratory investigations.

I wish to put on record my sincere thanks to Dr. Rajesh Kumar and Dr. Desh Deepak Singh for making valuable suggestions in the manuscript. My sincere thanks are due to Dr. L.K. Singhal and Shri Tasabber Khan for their technical support in electronic media. Finally, but by no means least, I would like to thank my wife Vandana, daughter Km. Mahima and son Yatishwar who have always been cooperative and helpful during the preparation of this book.

RS Chauhan

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Introduction

- Diagnosis
- Historical milestones
- Symptoms, Signs and Lesions
- Computer Application in Diagnostic Laboratory

DIAGNOSIS

Diagnosis is an art of precisely knowing the cause of a particular disease. (Dia =thorough; gnosis = knowledge). The diagnosis is based on accurate history, careful examination of animal, collection of material for laboratory examination and correlation and interpretation of findings. The historical milestones in the field of veterinary and medical sciences related to diagnosis are enlisted in Table 1.

HISTORICAL MILETONES

Table 1.1 *Historical milestones in the field of veterinary laboratory diagnosis.*

Sr.No.	Year	Scientist/ Author	Events
1	250 BC	Salihotra	Description in Ayurvedas (Science of life)
		to Palakapya	Description in Ayurvedas
	1200 BC	Charak	Tested urine for diabetes
2	2100 BC	Hammurabi	Conduct of veterinary practitioners "Laws of Hammurabi"
3	460 BC- 375 BC	Hippocrates	Studied the pneumonia, malaria "Father of medicine"

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