

This report presents the recommendations of a WHO Expert Committee commissioned to coordinate activities leading to the adoption of international recommendations for the production and control of vaccines and other biologicals and the establishment of international biological reference materials. The report starts with a discussion of general issues brought to the attention of the Committee and provides information on the status and development of reference materials for various antibodies, antigens, blood products and related substances, cytokines, growth factors, and endocrinological substances. The second part of the report, of particular relevance to manufacturers and national regulatory authorities, contains guidelines on the production and quality control of candidate tetravalent dengue virus vaccines and recommendations for the preparation, characterization and establishment of international and other biological reference standards. Also included are a list of recommendations, guidelines and other documents for biological substances used in medicine, and of international standards and reference reagent for biological substances.

WHO EXPERT COMMITTEE ON BIOLOGICAL STANDARDIZATION

WHO Technical Report Series — 932



WHO EXPERT COMMITTEE ON BIOLOGICAL STANDARDIZATION

Fifty-fifth report



World Health Organization

The World Health Organization was established in 1948 as a specialized agency of the United Nations serving as the directing and coordinating authority for international health matters and public health. One of WHO's constitutional functions is to provide objective and reliable information and advice in the field of human health, a responsibility that it fulfils in part through its extensive programme of publications. The Organization seeks through its publications to support national health strategies and address the most pressing public health concerns of populations around the world. To respond to the needs of Member States at all levels of development, WHO publishes practical manuals, handbooks and training material for specific categories of health workers; internationally applicable guidelines and standards; reviews and analyses of health policies, programmes and research; and state-of-the-art consensus reports that offer technical advice and recommendations for decision-makers. These books are closely tied to the Organization's priority activities, encompassing disease prevention and control, the development of equitable health systems based on primary health care, and health promotion for individuals and communities. Progress towards better health for all also demands the global dissemination and exchange of information that draws on the knowledge and experience of all WHO's Member countries and the collaboration of world leaders in public health and the biomedical sciences. To ensure the widest possible availability of authoritative information and guidance on health matters, WHO secures the broad international distribution of its publications and encourages their translation and adaptation. By helping to promote and protect health and prevent and control disease throughout the world, WHO's books contribute to achieving the Organization's principal objective of the attainment by all people of the highest possible level of health.

The WHO Technical Report Series makes available the findings of various international groups of experts that provide WHO with the latest scientific and technical advice on a broad range of medical and public health subjects. Members of such expert groups serve without remuneration in their personal capacities rather than as representatives of governments or other bodies; their views do not necessarily reflect the decisions or the stated policy of WHO. An annual subscription to this series, comprising about six such reports, costs CHF 168.00/US\$ 151.00 (CHF 128.40/US\$ 115.00 in developing countries). For further information, please contact: WHO Press, World Health Organization, 20 avenue Appia, 1211 Geneva 27, Switzerland (tel. +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int; order on line: <http://www.who.int/bookorders>).

SELECTED WHO PUBLICATIONS OF RELATED INTEREST

WHO Expert Committee on Biological Standardization.

Fifty-fourth report.

WHO Technical Report Series, No. 927, 2005 (154 pages)

web site www.who.int/biologicals

WHO Expert Committee on Biological Standardization.

Fifty-third report.

WHO Technical Report Series, No. 926, 2004 (109 pages)

WHO Expert Committee on Biological Standardization.

Fifty-second report.

WHO Technical Report Series, No. 924, 2004 (234 pages)

WHO Expert Committee on Biological Standardization.

Fifty-first report.

WHO Technical Report Series, No. 910, 2002 (104 pages)

WHO Expert Committee on Biological Standardization.

Fiftieth report.

WHO Technical Report Series, No. 904, 2002 (107 pages)

Further information on these and other WHO publications can be obtained from
Marketing and Dissemination, World Health Organization, 1211 Geneva 27, Switzerland

This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization

WHO Technical Report Series

932

**WHO EXPERT COMMITTEE
ON BIOLOGICAL
STANDARDIZATION**

Fifty-fifth Report



**World Health
Organization**

WHO Library Cataloguing-in-Publication Data

WHO Expert Committee on Biological Standardization (2004 : Geneva, Switzerland)
WHO Expert Committee on Biological Standardization : fifty-fifth report.

(WHO technical report series ; 932)

1.Biological products - standards 2.Immunologic factors - standards 3.Blood
4.Reagent kits, Diagnostic - standards 5.Reference standards 5.Guidelines I.Title
II.Series

ISBN 92 4 120932 1
ISSN 0512-3054

(LC/NLM classification: QW 800)

© World Health Organization 2005

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel: +41 22 791 2476; fax: +41 22 791 4857; email: HYPERLINKmailto:bookorders@who.int bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; email: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

(The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

This publication contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization.

Typeset in China, Hong Kong Special Administrative Region
Printed in Singapore

Contents

Introduction	1
General	2
Developments in biological standardization: WHO programmatic issues	2
Developments in biological standardization: vaccines and other biologicals	4
Developments in biological standardization: blood products and related in vitro diagnostics	6
Developments in biological standardization: advancement of technical expertise of regulatory authorities in the area of blood products and in vitro diagnostics	7
Developments in biological standardization: new web site for dissemination of information from Quality Assurance and Safety of Plasma Derivatives and Related Substances	8
Developments in biological standardization: reports from the WHO International Laboratories	9
Feedback from users: issues highlighted by the WHO Global Training Network and by the WHO prequalification process for vaccines	11
International guidelines, recommendations and other matters related to the manufacture and quality control of biologicals	12
Guidelines for production and quality control of candidate tetravalent dengue virus vaccine (live)	12
Recommendations for the preparation, characterization and establishment of international and other biological reference standards	14
Recommendations for the production and control of rabies vaccines — proposed revision	15
Recommendations for the production and quality control of diphtheria, pertussis and tetanus vaccines — proposed revision	18
Guidelines for the safe production of poliomyelitis vaccines from attenuated Sabin strains — proposal	19
Recommendations, guidelines and other documents for biological substances used in medicine: review of the consolidated list	20
Quality, safety and efficacy of antivenom sera	22
Good manufacturing practices for blood establishments: progress report on training activities	23
International Reference Materials	24
Comparison of glass ampoules versus rubber-stoppered vials for the storage of international biological standards	24
Priorities for replacement and new international biological reference standards for biologicals	25
Proposed disestablishment of the International Reference Reagent for hepatitis B vaccine	27

Antigens and related substances	27
Smallpox vaccines — progress report on proposed second International Standard	27
Yellow fever vaccine — outcome of an enquiry regarding the use of the first International Standard	29
Poliomyelitis vaccine, oral — second International Standard	30
Diphtheria toxin: proposed new use for an International Standard	31
Pertussis vaccine, whole cell — progress report on proposed fourth International Standard	33
Anti-pertussis typing-sera: WHO reference reagents for serotypes 2 and 3	33
Blood products and related substances	35
Anti-A and anti-B blood typing serum: proposed reference reagents	35
Anti-D blood typing serum: first International Standard for minimum potency of blood grouping reagents	36
Factor V Leiden, first International Genetic Reference Panel	37
Blood coagulation factor XIII, plasma: first International Standard	38
Immunoglobulin, intravenous: WHO reference reagents for anti-D content	39
Cytokines, growth factors and endocrinological substances	40
Progress report on follow-up from the seventh WHO Consultation on cytokines, growth factors and endocrinological substances	40
Diagnostic reagents	41
Global measurement standards for in vitro diagnostic devices: principles and priorities	41
Diagnostic tests for anti-hepatitis C virus: proposal for a reference standard and preliminary results	42
Annex 1	
Guidelines for the production and quality control of candidate tetravalent dengue virus vaccines (live)	44
Annex 2	
Recommendations for the preparation, characterization and establishment of international and other biological reference standards (revised 2004)	73
Annex 3	
Recommendations, guidelines and other documents for biological substances used in medicine	132
Annex 4	
Biological substances: International Standards and Reference Reagents	136

WHO Expert Committee on Biological Standardization

Geneva, 15–18 November 2004

Members

- Professor W.G. van Aken, Amstelveen, the Netherlands
- Dr R. Dobbelaer, Head, Biological Standardization, Louis Pasteur Scientific Institute of Public Health, Brussels, Belgium (*Chairman*)
- Dr F. Fuchs, Director — Lyon Site, Agence Française de Sécurité Sanitaire de Produits de Santé (AFSSAPS), Direction des Laboratoires et des Contrôles Médicaments Immunologiques et Produits thérapeutiques, Lyon, France
- Dr B. Kaligis, Quality Assurance Manager, Bio Farma, Bandung, Indonesia
- Dr T. Kurata, Director General, National Institute of Infectious Diseases, Tokyo, Japan (*Vice-Chairman*)
- Dr N.V. Medunitsin, Director, Tarasevic State Institute for the Standardization and Control of Medical Biological Preparations, Moscow, Russian Federation
- Dr P. Minor, Head, Division of Virology, National Institute for Biological Standards and Control, Potters Bar, Herts., England
- Professor F. Ofosu, Department of Pathology and Molecular Medicine, McMaster University, Hamilton, Ontario, Canada
- Dr F. Reigel, Head, Swissmedic, Biological Medicines & Laboratories, Agency for Therapeutic Products, Berne, Switzerland (*Rapporteur*)

Representatives of other organizations

- Council of Europe, European Directorate for the Quality of Medicines*
Mr J-M. Spieser, European Pharmacopoeia Commission, Strasbourg, France
- Developing Country Vaccine Manufacturer's Network*
Dr S. Jadhav, Executive Director, Quality Assurance and Regulatory Affairs, Serum Institute of India Ltd, Pune, India
- International Federation of Clinical Chemistry and Laboratory Medicine*
Professor J. Thijssen, University Hospital Utrecht, Utrecht, the Netherlands
- International Federation of Pharmaceutical Manufacturers Associations*
Dr M. Duchêne, Director, Quality Control, GlaxoSmithKline Biologicals, Rixensart, Belgium
- Dr A. Sabouraud, Director, Quality Control of Development Products, Aventis Pasteur S.A., Marcy l'Etoile, France
- International Organization for Standardization*
Mr T.J. Hancox, Technical Programme Manager, Standards Department, ISO, Geneva, Switzerland
- International Society on Thrombosis and Haemostasis*
Professor I. Peake, Deputy Director, Division of Genomic Medicine, University of Sheffield, Royal Hallamshire Hospital, Sheffield, England
- United States Pharmacopeia*
Dr T. Morris, United States Pharmacopeia, Rockville, MD, USA

Secretariat

- Dr D. Armstrong, Executive Director, Natal Bioproducts Institute, Pinetown, South Africa (*Temporary Adviser*)

- Dr T. Barrowcliffe, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr A. Bristow, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr D. Calam, Pewsey, Wiltshire, England (*Temporary Adviser*)
- Dr A.M. Cheraghali, Director General, Iran Drug Selection Committee, Ministry of Health and Medical Education, Tehran, Islamic Republic of Iran (*Temporary Adviser*)
- Dr M. Corbel, Division of Bacteriology, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr R.H. Decker, Hepatitis and AIDS Research, Deerfield, Illinois, USA (*Temporary Adviser*)
- Dr K. Eckels, Walter Reed Army Institute of Research, Department of Biologics Research, Washington, DC, USA (*Temporary Adviser*)
- Dr W. Egan, Deputy Director, Office of Vaccines, Center for Biologics Evaluation and Research, Food and Drug Administration, Rockville, MD, USA (*Temporary Adviser*)
- Dr R. Gaines-Das, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr E. Griffiths, Associate Director General, Biologics and Genetic Therapies Directorate, Health Canada, Ottawa, Ontario, Canada (*Temporary Adviser*)
- Dr S. Inglis, Director, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Mrs T. Jivapaisarnpong, Director, Division of Biological Products, Department of Medical Sciences, Ministry of Public Health, Nonthaburi, Thailand (*Temporary Adviser*)
- Dr N. Lelie, Sanquin-CLB, Alkmaar, the Netherlands (*Temporary Adviser*)
- Dr J. Löwer, Director, Paul Ehrlich Institute, Langen, Germany (*Temporary Adviser*)
- Dr J. Saldaña, Canadian Blood Services, Ottawa, Canada (*Temporary Adviser*)
- Dr M. Weinstein, Associate Deputy Director, Office of Blood Research and Review, Center for Biologics Evaluation and Research, Food and Drug Administration, Rockville, MD, USA (*Temporary Adviser*)
- Dr D. Wood, Coordinator, Quality Assurance and Safety of Biologicals, World Health Organization, Geneva, Switzerland (*Secretary*)
- Professor Hongzhang Yin, Division of Biological Products, State of Food and Drug Administration, Beijing, People's Republic of China (*Temporary Adviser*)

预览已结束，完整报告链接和

<https://www.yunbaogao.cn/report/index/report>