

Inactivated Influenza Vaccines Prepared in Cell Culture

Editors: F. Brown, J.S. Robertson, G.C. Schild, J.M. Wood

Influenza vaccines have been produced in embryonated hens' eggs for over 50 years, but recently there has been considerable effort to develop cell culture systems for vaccine production.

This publication reports on a two-day meeting held at the National Institute for Biological Standards and Control. Scientists from many countries involved in the surveillance of influenza viruses and in the manufacture and control of influenza vaccines present their latest findings regarding this new vaccine development. The feasibility and practical advantages of producing a cell-culture-derived vaccine are clearly demonstrated, as are the promising results from the initial clinical trials. The main focus of these studies is to make recommendations for future action which should form the basis for collaborative studies and further activities by WHO and regulatory agencies to ensure that cell-culture-derived influenza vaccines are at least equivalent to conventional egg-derived vaccines in terms of safety and effectiveness.

Contents

Wood, J.M.: Introduction

Session I: Isolation and Cultivation of Influenza Virus and Mammalian Cells

Robertson, J.S.: An Overview of Host Cell Selection

Kessler, N. et al.: Suitability of MDCK Cells Grown in a Serum-Free Medium for Influenza Virus Production

Merten, O-W. et al.: Production of Influenza Virus in Serum-Free Mammalian Cell Cultures

Govorkova, E.A. et al.: Growth and Immunogenicity of Influenza Viruses Cultivated in Vero or MDCK Cells and in Embryonated Chicken Eggs

Nerome, K. et al.: Evaluation of Immune Responses to Inactivated Influenza Vaccines Prepared in Embryonated Chicken Eggs and MDCK Cells in a Mouse Model

Zambon, M.: Cell Culture for Surveillance of Influenza

Discussion

Session II: Selection of Vaccine Strains

Voeten, J.T.M. et al.: Generation and Characterisation of Reassortant Influenza A Viruses Propagated in Serum-Free Cultured MDCK-SF1 Cells

Discussion

Session III: Scale up for Vaccine Production

Brands, R. et al.: Influvac(rc): A Safe Madin Darby Canine Kidney (MDCK) Cell Culture

Based Influenza Vaccine

Kistner, O. et al.: Development of a Vero Cell-Derived Influenza Whole Virus Vaccine
Discussion

Session IV: Clinical Trials

Palache, A.M. et al.: Safety, Reactogenicity and Immunogenicity of Madin Darby Canine Kidney Cell-Derived Inactivated Influenza Subunit Vaccine. A Meta-Analysis Of Clinical Studies

Percheson, P.B. et al.: A Phase I, Randomised Controlled Clinical Trial to Study the Reactogenicity and Immunogenicity of a New Split Influenza Vaccine Derived from a Non-Tumourigenic Cell Line

Discussion

Session V: General Regulatory Issues (1): Cell Substrates

Montagnon, B.J. et al.: Experience with Vero Cell at Pasteur Mérieux Connaught

Stacey, G.N.; Phillips, P.: Quality Assurance for Cell Substrates

Griffiths, E.: WHO Requirements for the Use of Animal Cells as in Vitro Substrates for the Production of Biologicals: Application to Influenza Vaccine Production

Dobbelaer, R.: ICH Guidelines and PhEur Monographs on Derivation and Characterisation of Cell Substrates Used for Production of Biotechnological/Biological Products

Discussion

Session VI: General Regulatory Issues (2): Cell Culture Influenza Vaccines

Levandowski, R.A.: Regulatory Perspective in the United States on Cell Cultures for Production of Inactivated Influenza Virus Vaccines

Chang, L. et al.: Cell culture Influenza Vaccine: An Australian Perspective

Wood, J.M. et al.: The Influence of the Host Cell on Standardisation of Influenza Vaccine Potency

Gérentes, L. et al.: Difficulties in Standardising the Neuraminidase Content of Influenza Vaccines

Discussion

Session VII: Summary and Recommendations