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TRANSMISSION OF VIRUS SAMPLES

by

J.B. Brooksby, J. Davie and R.S. Hedger*
Animal Virus Research Institute
Pirbright, Woking, Surrey
England

With an Introduction

by

E.I. Hugh
Agriculturalist
South Pacific Commission

INTRODUCTION

The South Pacific territories have long enjoyed the fortunate status of the relative absence of any serious and devastating animal disease. This favourable situation could be attributed to a number of factors, the foremost of which were the difficulty of communication, and the lack of regular movement of livestock on an inter-territorial basis.

However, territories are now importing livestock in increasing numbers from metropolitan countries to improve their local stock, and the advent of air travel has brought territories into closer and more frequent contacts with countries from which pests and serious livestock diseases can be introduced. Despite the strict and constant vigilance of quarantine officers, this danger is ever present, and cannot be ignored.

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* Bull. Off. int. Epiz., 1964, 61 (11-12) 1605-1615.
XIe Conférence de la Commission permanente de la Fièvre aphteuse de l'O.I.E.

The following article deals with instructions for the transmission of Virus samples to the Foot and Mouth Laboratory at Pirbright, Woking, Surrey, England, but the Commission would like to emphasize that there is no need for alarm, as there has been no report of any incidence, or even suspect case of Foot and Mouth Disease in the South Pacific. It is the earnest desire of the Commission that this status quo can be preserved for as long as possible, and it is strongly urged that all Territories take the necessary precautions with this object in view.

The article now being circulated, is to assist territories in this objective. It describes the techniques to be adopted in the transmission of samples for virus determination, and particular attention should be directed to the type of containers and preservative to be used, and the method of packaging to prevent breakage.

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Since the World Reference Laboratory for Foot-and-Mouth Disease receives, as an essential part of its activity, about 600 to 800 samples per year from overseas, it is appropriate that a paper should be submitted to this Meeting describing the techniques which we would prefer to see adopted for the transmission of virus samples.

The great majority of samples which are received are packed in a perfectly satisfactory manner but from time to time considerable inconvenience is caused by transmission to us of samples which have been damaged in transit, usually because the initial method of packing has been faulty. Such samples, at best, are rendered of little or no value for type determination and, at worst, they cause a serious risk of dissemination of virus in transit. As far as possible, all countries likely to send material to the World Reference Laboratory have been circularised with the requirements for packing but from time to time samples are submitted by regional laboratories within countries which have not seen the regulations and it is these samples which are most likely to fail to come up to requirements. Notes for the guidance of those sending in samples are appended to this article. They have recently been revised as the result of our experience in this direction.

The basic principles involved in packing virus for transport govern the construction and use of the containers provided.

A. - CONSTRUCTION

From the inside out, the following are the requirements:

1. A strong glass phial should be used with a screw cap with a strong rubber washer. The best container of this type we have found is the 30 ml. Universal bottle.

2. This phial should be wrapped in absorbent cotton wool or lint or in corrugated paper, arranged to protect the ends as well as the sides of the phial.

3. The wrapped phial should be inserted in a metal container in which it is a snug fit.

4. The metal container should be fluid-tight, preferably with a screw cap and a rubber washer. If such a container is not available, a tin with a tight-fitting lid which can be soldered on should be used.

5. The metal container should be placed in a solid outer covering to prevent distortion. We have preferred to use a solid cardboard tube closed with a metal cap at each end but the alternative wooden box with a metal cap is equally satisfactory.

6-8. Sturdy wrapping paper secured by adhesive tape or string should be used and labels should be clear and comply with the International Postal Regulations.

B. - USE OF THESE CONTAINERS

1. The fluid in which the material is suspended should be a good preservative of virus activity. We have preferred a 50/50 mixture of glycerine and buffer phosphate solution at pH 7.4-7.6. Instructions are enclosed with the pamphlet on the method of preparation of the buffer phosphate.

2. The sample having been placed into the phial and the cap replaced, it is necessary to clean and disinfect the outside of the phial. This is necessary even if the container has been held by an assistant during the actual placing of the material in the phial.

3. Sufficient information for the identification of the material should be written on a piece of adhesive tape on the outside of the phial.

4. The wrapping of the phial in the various containers should be completed in clean surroundings.

5. If collection takes place at a point which is some distance from the point of despatch by air, the sample should be kept cool.

6. Despatch by air freight is preferred as in general being more rapid than by the postal services. The World Reference Laboratory makes arrangements to collect material from the airport at London and has arrangements to facilitate Customs clearance.

Fig. 1. - Component parts of kit used by World Reference Laboratory.

The use of containers in the way described obviates many of the difficulties which may be experienced in the transmission of virus samples but it may be useful here to refer to some of the main errors which have been encountered.

1. The use of sealed test tubes drawn out in a flame instead of screw-capped phials is satisfactory only if the sealing is as strong as the rest of the tube. In many cases this is not so and the seal is made by drawing out the tube to a fine point which becomes broken in transit.

2. The use of screw-capped phials with fibre or cardboard washers has led to many cases of leakage, particularly if the containers have been in store some time and the elasticity of the washer has been lost.

3. There should be a minimum of movement between the various layers in the packing. A small glass phial rattling about in a tin can becomes relatively easily broken.

4. Attempts to maintain refrigeration of the sample during transit must be carefully designed and are usually better ignored, since a parcel travelling by air freight spends most of the journey in the baggage hold of an aircraft at a low temperature. In particular, the use of vacuum flasks to contain glass phials packed in ice is to be avoided since, as the ice melts, the glass phials may be thrown against the flask, which breaks, perhaps breaking the phial at the same time. It is very difficult to determine when the parcel arrives how much leakage of virus may have been taking place into the packing.

5. It is necessary to give information on the phial as to the identity of the sample. Supplementary information should be submitted in duplicate, one copy to be enclosed with the sample and another under separate cover.

Although this paper is primarily concerned with transport of the material, it may be as well to mention also that overcoming the transport problem is only worthwhile if the material itself is satisfactory in the first instance. Samples of epithelium sent for complement fixation tests should always be as fresh as possible. Care should also be taken not to include adventitious material or tissues other than epithelium.

The postal regulations for the transmission of pathological material are in general covered by the instructions given in the regulations under the Universal Postal Convention. In many countries any person sending by post a deleterious liquid or substance for examination or analysis otherwise than provided by the Postal Regulations is liable to prosecution.

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