DIAGNOSIS OF BOVINE CAMPYLOBACTERIOSIS

by

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ABSTRACT

Seven virgin heifers and two bulls, five and six years old respectively, were challenged with *Campylobacter fetus* subsp. *venerealis*, isolate FD15. The challenge dose consisted of approximately 10^9 organisms per ml of phosphate buffered saline (PBS)pH7.2.

Cervicovaginal mucus was collected from heifers beginning one week after exposure using the technique described by Hoerlein and Kramer.[31] These were cultured on a solid selective medium.[14 23] Of the seven heifers, two became infected as determined by consistent recovery of the organism from cervical mucus samples. Seventy-four samples from both heifers were cultured; eight samples from one heifer, D07, were discounted on the assumption that she overcame her infection. Of the sixty-six samples, forty-eight yielded the organism on culture, giving a recovery rate of 72.4%.

Preputial samples were collected from the two bulls by a pipette[3] using the technique described by Dufty.[23] These were cultured directly and following millipore filtration on a solid selective medium.[14 23] They were also examined by immunofluorescence using a similar technique to that of Dufty[22] and Schutte.[65] Of the thirty-two samples examined by both methods, twenty-six (81%) were positive on immunofluorescence examination, twenty-two (69%) were positive on culture, and twenty-seven (84%) were positive to both tests.

It is suggested that the techniques used for sample collection and examination by culture and immunofluorescence provide an effective method for herd diagnosis of the disease.

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CONTENTS

LIST OF TABLES

LIST OF PLATES

INTRODUCTION

Although the clinical signs associated with genital tract infection by *Campylobacter fetus* subsp. *venerealis* in cattle have been well documented, definitive diagnosis has been a difficult task. The major problems have been the organism's susceptibility to normal atmospheric levels of oxygen, its fastidious growth requirements, and overgrowth by contaminating organisms. Indeed, many of the early reports of diagnosis of the disease have been largely based on the detection of the organism by microscopy.

The attention of many workers in this field has been directed to overcoming these problems thereby increasing diagnostic efficiency. This has resulted in the development of better and more selective media for bacteriological culture, the use of microaerophilic conditions for culturing the organisms, the use of millipore filtration to reduce contamination, and the development of enrichment media to preserve the viability of the organism during transportation.

Diagnosis of the disease in bulls can now be efficiently carried out by cultural and immunofluorescence examinations of preputial samples, either singly or preferably in combination. Using this approach, diagnostic efficiency rates of over 90% have been achieved.[11 22 64]

Diagnosis of the disease in females is best carried out by cultural examinations of cervical and/or vaginal mucus samples collected from non-pregnant animals. Success rates of 78%,[14] 83%,[37] and 54%[31] have been achieved using this method. The use of the vaginal mucus agglutination (VMA) test is considered valuable for herd diagnosis.[9]

The objectives of the investigation reported in this thesis were to attempt to artificially infect virgin heifers and bulls with *C. fetus* subsp. *venerealis*, isolate FD15, to determine the duration of the infection in heifers as shown by recovery of the organism from cervical mucus, and to assess the diagnostic efficiency of cultural examination in the female and of cultural and immunofluorescence examination in the male.