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ANTIBIOTIC THERAPY FOR SUBCLINICAL MASTITIS
IN EARLY LACTATION; EFFECTS ON INFECTION,
SOMATIC CELL COUNTS AND MILK PRODUCTION

A THESIS PRESENTED IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF AGRICULTURAL SCIENCE
IN ANIMAL SCIENCE AT
MASSEY UNIVERSITY

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1982

ABSTRACT

This study was conducted with the main purpose of investigating the effects of antibiotic therapy applied during lactation on the subclinically infected quarters in terms of bacterial infection, somatic cell count (S.C.C.), milk yield and composition (i.e. milkfat and protein percentage). The main objectives involved were:-

- (1) To identify cows with high somatic cell counts (subclinical mastitis) in early lactation.
- (2) To identify the individual quarters with high somatic cell counts and bacterial infection.
- (3) To treat some of these high S.C.C. quarters with an antibiotic, and leave some of them untreated (control quarters).
- (4) To measure the effects of treatment on S.C.C., bacterial infection, yield and composition of milk.

During weeks four to six of lactation 12 cows from a herd of 100 cows at No.3 Dairy Research & Development Unit, Massey University, were identified to have consistently high values for somatic cell counts. Milk samples were aseptically taken from the individual quarters of these cows and subjected to bacteriological tests. Eight subclinically infected quarters with high somatic cell counts were subsequently treated with sodium cloxacillin (Orbenin) formulated in a slow release base.

Before antibiotic treatment of any quarters, there was a close association between infection and somatic cell counts in individual quarters. Thus only 12% of the quarters which showed no infection had somatic cell counts higher than 300,000 cells/ml, whereas the corresponding proportion of infected quarters was 74%.

Out of the eight infected quarters which were treated with antibiotic, five were cured of infection (62.5% cure rate); in these quarters the average S.C.C. was greatly reduced from 4,207,000 cells/ml before treatment to about 160,000 cells/ml afterwards whereas the three quarters which were treated but not cured showed a slight decrease from 3,991,200 cells/ml before treatment to 2,638,800 cells/ml after treatment. The average somatic cell counts of the five infected control quarters increased slightly from their original value of about 2,061,500 cells/ml up to 2,111,000 cells/ml.

There was no significant or consistent effect of antibiotic therapy, successful or otherwise, on milk yield from individual quarters. However adjusted means showed a 10% non-significant difference between the successfully treated quarters and the untreated control quarters in favour of the cured quarters. The effects of treatment on milk composition were small and were significant only for protein percentage.

The practical implications of the results were discussed. From the results obtained firm conclusions on the effects of antibiotic therapy of subclinically infected quarters on milk yield, and composition were not possible. The major benefit is likely to be the reduction in the number of infected quarters, and the consequent reduction in the risk of new infection in other quarters. It is however suggested that more work is required to establish the actual effect of antibiotic therapy by obtaining information on the performance of the successfully treated quarters in the following lactation.

* * * * *

ACKNOWLEDGEMENTS

It is a pleasure to record my gratitude to many people who assisted in this work. My sincere thanks are extended to the following:

Dr C.W. Holmes for his invaluable continuing guidance and encouragement as my supervisor. He helped with part of the data collection and offered constructive criticism and guidance in writing up this thesis. His advice, help and concern with my welfare are highly appreciated.

Professor D.S. Flux offered advice on the statistical part of the work. His willingness to discuss problems on statistical procedures even at short notice made an invaluable contribution towards the author's readiness to tackle the analyses.

Mrs Yvonne Moore assisted in data collection and submission of milk samples to the Livestock Improvement Association Laboratory in Palmerston North for somatic cell count determinations. Her assistance and excellent co-operation helped to make this study more enjoyable than it otherwise might have been.

Miss Janis Frain and Mr Jeffrey Raven helped in the analysis of milk composition (milkfat and protein percentage). Miss Frain also helped in the Bacteriological analysis work. Her assistance is highly appreciated.

Messrs A. Lowe, M. Chesterfield and S. Harmer - staff at No.3 Dairy Research & Development Unit, assisted in the routine separation of the experimental cows into different grazing paddocks.

Dr R.B. Marshall and his staff in the Bacteriology Laboratory at the Faculty of Veterinary Science offered advice and help in the Bacteriological analysis work and *in vitro* sensitivity test of the pathogens isolated.

Staff of the Livestock Improvement Association Laboratory,
Palmerston North, for carrying out somatic cell count
determinations.

Dr A.W.F. Davey and Dr D.D.S. MacKenzie for their encouragement
and concern with my well-being.

Mrs Carolyn Castle, Secretary - Animal Science Department, for
her assistance in clerical work and excellent co-operation.

It is not possible to list the names of all who contributed
either directly or indirectly towards this study, but the author
wishes to express his thanks to all those who discussed with him
matters related to this work and are not mentioned individually.
Notable among these are the Staff of the Animal Science Department,
Massey University. The excellent co-operation of the Library staff
is also acknowledged with thanks.

The Helen E. Akers Scholarship was awarded to the author and he
expresses his appreciation to the Trustees of the Scholarship for
this kind of assistance.

The author wishes to record his gratitude to the New Zealand
and Tanzania Governments for making it possible for him to undertake
postgraduate studies at Massey University.

Sincere thanks are due to Mrs Valerie Oram for the skilful and
efficient manner in which she typed the manuscript.

Finally, I wish to express special thanks to my family for their
continued encouragement and understanding throughout the period I
have been away from them.

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