

**ABSTRACTS FROM THE PROCEEDINGS OF THE 2nd TANZANIA VETERINARY
ASSOCIATION SCIENTIFIC CONFERENCE,**

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**SOME CURRENT RESEARCH APPROACHES
TO IMPROVED CONTROL OF
HAEMOPROTOZOAN DISEASES OF CATTLE**

R. Gray,

The International Laboratory for Research on Animal Diseases was established in Nairobi in 1973 by agreement between the Government of Kenya and the Rockefeller Foundation acting for the Consultative Group on International Agricultural Research. The mandate of the Laboratory is to develop safe, effective and economically feasible control measures for Livestock diseases which seriously limit world food production. At present ILRAD is concentrating on trypanosomiasis and theileriosis, two haemoprotezoan disease complexes of major economic importance in many African countries.

The research programme on each disease includes epidemiological studies and basic laboratory work concentrating on immunological approaches. In the case of theileriosis, epidemiological studies cover collection and typing of *Theileria parva* isolates using monoclonal antibodies, assessment of the importance of *T. lawrencei* and *T. mutans*, determination of cross protective and therapeutic drug sensitivity profiles, production of sporozoites from selected stocks with desirable immunogenic properties, and their use in pilot infection and drug-treatment experiments in field locations. Laboratory studies are also in progress aimed at the development of improved immunisation procedures using isolated *Theileria sporozoite* and schizont antigens.

With regard to trypanosomiasis, epidemiological research embraces detailed analysis of the components of trypanosomiasis challenge in a restricted field location, participation in training and supervision of personnel concerned with entomological and animal health aspects of work on trypanotolerance in livestock in collaboration with ILCA and investigations associated with Ndama cattle production in West Africa. In the Laboratory, work is broadly divided into two projects. The first includes all activities such as parasite culture, typing, differentiation, metabolism and molecular biology related to the use of trypanosomes or trypanosomal products to achieve immunisation of livestock. The

second covers studies on comparative immunology and genetic resistance, including the basic immune response, trypanotolerance in domestic animals and wildlife, and pathogenesis which could lead to increased immunity through manipulation of host responses. Both the trypanosomiasis and theileriosis research programmes include strong training components to improve the capacity of technicians and scientists from affected countries to apply existing and future diagnostic and control measures effectively.

**FIELD TRIAL TO DETERMINE EFFICACY OF
PARVAQUONE AGAINST NATURALLY OC-
CURRING CASES OF EAST COAST FEVER**

Mbwambo, H.A., Mkonyi, P. Chua, R.B.

Parvaquone (Clexon (R) Wellcome) was tested for its efficacy against East Coast Fever (*Theileria parva parva* infection in 51 naturally infected cattle. The drug showed a suppressive effect on both asexual *Theileria* schizonts and piroplasms. A recovery rate of 86.27% was recorded. Best results were obtained if Clexon treatment was effected in the early stage of the disease, before piroplasmosis and distress were pronounced. Carrier state in *Theileria parva parva* recovered animals is suspected.

**TICK CONTROL CONSTRAINTS IN TAN-
ZANIA**

L. K. Kagwira and S. R. Mbitse

The impact of ticks on livestock development in Tanzania is apparent due to the fact that tick-borne diseases are the first and foremost killers of livestock in this country. Control measures against ticks, spanning nearly three quarters of a century have been applied and efforts are still being intensified to this effect. In certain areas tick control was achieved at early stages, but complete success has not been achieved because of various problems encountered. This paper attempts to describe the tick control measures applied, constraints encountered and suggests possible solutions to the tick control problems.

THE RATIONAL USE OF CHEMOPROPHYLAXIS IN THE CONTROL OF BOVINE TRYPANOSOMIASIS

R.J. Connor

The purpose of this brief presentation is to introduce ideas for discussion, which may help in the formulation of suitable regimes of chemoprophylaxis in the control of bovine trypanosomiasis. The epidemiology of bovine trypanosomiasis is very complex, but may be considered to have five major determinants, each modified by many variables, which interact to create a complex epidemiological picture. These major areas are: Climate, Management, Tsetse, Cattle and Trypanosomes. Management is central to the problem for it determines where animals graze, the period for which animals graze, disease control measures and the breeds of animals kept. It is unreasonable to expect to implement chemoprophylaxis without due attention to management practices. Control of trypanosomiasis can be achieved by removal of the vector, the tsetse fly, but the enormous cost of such a radical option results in reliance on the less costly method of chemoprophylaxis. Attention to the control of other prevalent diseases is essential to ensure that healthy cattle will be protected from the risk of trypanosomiasis by chemoprophylaxis.

PROGRESS IN TRYPANOSOMIASIS CONTROL IN TANZANIA

S.R. Mbise

The major constraint to livestock development in Tanzania has been human and animal trypanosomiasis, a disease caused by protozoan parasites of the genus *Trypanosoma* and mainly transmitted by tsetse flies, *Glossina* spp. which occupy two thirds of the country. Attempts to control the disease aimed at attacking the trypanosome and the vector have been employed since early 1900's. Despite continuous threat posed by the tsetse flies to the health of man and his animals, some progress has been made towards controlling trypanosomiasis. This paper reviews the progress of the measures taken in controlling trypanosomiasis in Tanzania over the last 60 years.

THE EPIDEMIOLOGY OF BOVINE PARASITIC OTITIS

P. Msolla

The nematode, *Rhabditis bovis* were frequently recovered from aural discharges from the external

pinna, around the ear base and the neck region of clinically infected animals. Up to 30 worms per 100 ml of dip wash were recovered from dip tanks in which cattle suffering from Parasitic Otitis had been routinely dipped. The worms remained viable and multiplied in 0.25% Toxaphene for up to 28 days. During the *in vitro* trials, nicotine at 2 ppm and copper sulphate at 4% when mixed separately with 0.25% toxaphene dip wash were able to kill both the nematodes *Rhabditis bovis* and the ticks *Rhipicephalus appendiculatus*.

LUMPY SKIN DISEASE EPIDEMIC IN KILIMANJARO REGION

A. J. Kondela, H.M. Centres, J.F.C. Nyange and A.N. Mbise.

A short account to the epidemiology of Lumpy Skin Disease (LSD) is given. Methods used for field investigation and diagnosis are described. Epidemiology and control of LSD with special reference to Kilimanjaro Region did not show a distinct pattern of progression. The disease occurred at the beginning of the rainy season and diminished at the beginning of the dry season. A vector which is present during the rainy season may be important in the transmission of the disease.

AN OUTBREAK OF ANTHRAX IN WILDLIFE IN LAKE MANYARA NATIONAL PARK, TANZANIA

A.N. Mbise, J.F.C. Nyange and E.M.S. Mbashu

An outbreak of anthrax in wildlife occurred in Lake Manyara National Park between January and April 1984 and over 700 impalas, 2 elephants, 3 hippopotamus, and 4 rhinoceros, are suspected to have died due to anthrax. During the investigations, the remains of three zebras, six buffaloes on bushbuck, one dik dik, one jackal, one hyena, one baboon, three vultures and one maribour stalk were found dead and causes were not ascertained. The findings helped to dispell reports that poachers had been carrying out large scale poisoning in the park.

COMPARATIVE STUDIES ON BLACKQUARTER VACCINE PRODUCTION AT ADRI - TANZANIA

J.R.L. Mhema

The immunizing and growth properties of 6 different *Clostridium chauvoei* strains were studied in 4 different media. Each medium produced a vaccine of

variable immunogenicity with the same strain. Some strains were found to be most virulent and producing variable potent vaccines, suggesting virulence could be a factor in potency. The phenomena of potency and virulence is discussed.

SALMONELLOSIS: THE DISEASE EPIDEMIOLOGY AND CONTROL

S.F.H. Jiwa

Salmonellosis from its advent to the present day extent and disease forms are discussed. Mention is made of the ever increasing menace of the disease both at home and the world over. Factors contributing to understanding of its epidemiology and institution of control measures are narrated. Finally the paper summarises the knowledge about Salmonellosis on the eve of the centenary of its discovery. It is hoped that this update will avail the farmer and the veterinarian into arresting the hitherto rapid spread of the disease in the face of mounting constraints.

BOVINE BRUCELLOSIS IN GOVERNMENT PARASTATAL AND UJAMAA VILLAGE DAIRY FARMS IN THE CENTRAL ZONE OF TANZANIA.

J. Kitanyi,

A brucellosis survey carried out in Government Institutions, Parastatal, Ujamaa and few individual farms in the central zone of Tanzania for a period of five years (1979 - 1983) showed that 34.2% of the farms have the disease and 5.2% of animals are infected. Control measures have only been taken in some of the farms and this has varied depending on financial ability and managerial competence. In farms where control measures has been instituted the disease has been reduced to low levels. Where control measures are not instituted the disease has persisted for a long time. Government guidelines on control of the disease covers only big units but they are not binding. The traditional herd has been neglected although it is the major supplier of milk to the majority of the population.

A FOLLOW UP REPORT ON JOHNE'S DISEASE AT LITI MPWAPWA

E.R. Batamuzi, I.P.S. Mtalo and J.I. Kitanyi.

Johne's disease was spotted in the ex-New Zealand Jersey heard at LITI Tengeru in 1981. Farms which had recently acquired animals from Tengeru were

alerted promptly and advised to screen their animals for Johne's disease. In this paper, results obtained after screening the entire herd at LITI Mpwapwa are reported. Of the fifty four animals screened, three animals reacted to Johnin test. No acid fast bacilli were detected. The possible sources of infection are discussed.

LAMENESS IN CATTLE; AN IMPORTANT ASPECT IN HEALTH AND PRODUCTION

M. N. Mgasa

Lameness in cattle is one of the major discomfort problems occurring in intensively managed cattle with high production. About 90 percent of lameness reported has been due to digital diseases with exotic breeds being more susceptible than indigenous breeds. Poor agents and genetic constitution predispose and or cause digital lesions. The economic losses due to digital diseases include reduced milk yield, loss of weight, reduced progress in fattening, premature culling, reduced fertility and increased veterinary overheads. Digital diseases should therefore be considered of paramount importance in animal production. Education to farmers, prevention and control of digital diseases at early stages is emphasized in order to enhance animal health and productivity.

SERO-PREVALENCE AND PATHOGENESIS OF TOXOPLASMA GONDII IN SHEEP AND GOATS IN TROPICAL REGIONS

Bhoop Singh and P. Msolla,

A serological survey to detect antibodies to *Toxoplasma gondii* was carried out using the indirect haemagglutination (IHA) test on 90 sheep and 251 goats belonging to the breeding farms of Marathwada Agricultural University, Parbhani, India. Out of 90 serum samples tested in sheep, 29 (32.2%) showed haemagglutinating antibody titres ranging from 1:8 to 1:156 with seven sera (7.7%) showing titres 1:64 and above. The prevalence in ewes was significantly higher (35.8%) than rams (21.7%). In goats the seroprevalence in does was higher (32.2%) than bucks (29.4%) and significant titres (1:64 or above) were seen in 9.1 per cent cases. The kids born to seropositive dams from day-old to 8 weeks of age but abortions were seen only in goats having a titre of 1:64 and above. Gynaeco-obstetrical problems like dystokia, infertility and neonatal mortality in seropositive cases were also observed. In experimentally infected female goats, pyrexia,

enlargement of regional lymph node, anaemia, mild diarrhoea, dyspnoea, progressive paresis of hind quarters and muscular tremor were observed. Abortions occurred in two goats. There was leucocytosis with neutrophilia, lymphopenia, eosinophilia and monocytosis. Blood glucose levels decreased from 50-60 mg/dl (preinfection) to 22-26 q/dl 6-8 days post infection. *T. gondii* was isolated from blood and lymph nodes of goats 5-7 days post-infection by mice inoculation.

FIXATIVE FOR MATERIAL PRESERVATION AND THEIR ROLE IN ENHANCING DIAGNOSTIC CAPABILITY: A REVIEW

G.K. Mbassa and M.N. Hyao

Animal diseases in Tanzania are among the major setbacks to livestock development. To effectively treat and control them, histopathology and histochemistry have gone as far as identifying problems in tissue metabolism and chemical dysfunction. These two methods can be performed relatively easily. Any material intended for such procedures has to be handled in the correct way to give maximum diagnostic information.

UTILIZATION ON MEDICINAL PLANTS IN VETERINARY PRACTICE

M.M. J. Minja

Majority of tropical countries including Tanzania have got vast resources of plant materials for medicinal purposes, which either remain untapped or underutilized. Medical plants are of value not only in traditional medicine but also in modern medicine. The list of such plants is very long including *Agave sisalana*, *Cinchona succirubra*; *Citrus aurantium*, *Catharanthus roseus*, *Cymbopogon citratus*, — *Eucalyptus globulus*, *Rauwolfia serpentina*; *Datura stramonium*, *Dioscorea floribunda*, *Strychnos spinosa*, — *Azadirachta indica*, *Ocimum gratissimum*, *Ocimum basilicum*, *Cassia floribunda*, *Solanum incanum*. This paper reviews the utilization of medicinal plants in traditional aspect in the maintenance of animal health and laboratory methods of evaluation them.

EFFECT OF CLOPROSTENOL THROUGH INTRAVULVO-SUBMUCOSAL INJECTIONS ON HORMONAL PROFILE AND FERTILITY IN SUBESTROUS CATTLE

F.S. Chauhan, F.O.K... Mgongo, B.M. Kessy and S. Gombe

Thirteen subestrous cows were treated with one of the three doses of cloprostenol (500, 125, 62.5 µg im, 125, 62.5 µg ivsm). Blood serum progesterone (P₄) decreased abruptly and estradiol (E₂) levels increased from basal levels following injections of different doses of cloprostenol except for 62.5 µg dose. P₄ decreased to 5 nmol./L at or around 72 hour of treatment. E₂ levels increased to 300 pmol/L after 24 hours of cloprostenol injections except for 62.5 µg dose. High compatibility was observed between P₄ profile and clinical findings following 500 and 125 µg of cloprostenol treatment. Subsequently, 69 subestrous cows received one of the four doses of cloprostenol. The proportion of cows reported in estrus within 96 hour following 500 µg im, 250, 125, 62.5 µg of cloprostenol for ivsm injections were 60, 80, 67.8 and 18 per cent, respectively. Of the total, 29 cows inseminated 41.3 percent conceived. It is concluded that cloprostenol at the dose rate of 125 µg and above through ivsm injections is effective to cause luteolysis, induce estrus and establish fertility in subestrous cattle. The method is economical but time consuming compared to intra-muscular route.

THE ROLE OF PROSTAGLANDINS IN THE CONTROL OF ANIMAL REPRODUCTION: A REVIEW

B.M. Kessy, F.S. Chauhan

In the last 15 years, a lot of research workers have come up with extensive information on the biosynthesis, metabolism and wide spectrum of biological effects of prostaglandins in animals. The discovery of the central role of prostaglandins not only in the control of reproductive processes but also in so many facets of physiology and pharmacology has led to the rapid application of the basic knowledge to clinical practice. Technical advances have been made in the laboratory and extracts of natural prostaglandins to various synthetic, high purity prostaglandins with reasonable stability, longer half-lives and more potent than natural prostaglandins have been prepared and used in Veterinary Medicine. The luteolytic properties of prostaglandin F₂ or its analogues have been exploited for the new methods of controlled breeding, induction of parturition or abortion, and its therapeutic responses on pathological reproductive conditions in farm animals are here-under review.

TECHNIQUES OF EPIDEMIOLOGY AND VETERINARY ECONOMICS

B.J. Mtel,

A comprehensive knowledge about the livestock industry is required so that it can be developed to in-

increase its contribution to the national economy. This depends against other things on the availability of factual and adequate information about the livestock production system as a whole. Techniques of epidemiology and veterinary economics and scientific methods for obtaining useful data and

processing them are required to provide information about animal health and production. The use of these techniques is considered to be an important part of any meaningful livestock information system, and thus an integral part of the decision making process and policy formulation.