

Sudan University of Science and Technology
Scientific Research Council
Research Proposal Form

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Date of submission	Research area	Serial number

Section One: General information

Title of the Research Project:

Infectious Bovine Keratoconjunctivitis (IBKC): Aetiology, Treatment and Vaccination Trials

Title in Arabic: التهاب القرنية والملتحمة فى الابقار: المسبب، العلاج والتحصين

College:

Veterinary Medicine and Animal Production

Department:

Pathology, Parasitology and Microbiology

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Head of the Research Unit:Name: **Dr. Khalid Rodwan Mohamed**

Signature:

Section Two: Project Description

1/ Summary:

-A survey for IBKC will be conducted in Khartoum State. The aetiology will be isolated, identified and subjected to the sensitivity of various antibiotics and subsequent treatment.

-Detection of antibodies in sera of infected cattle.

-Preparation of a killed vaccine.

2/ Justification:

IBKC is an economically important disease. It leads to drop in milk yield, accidents due to loss of vision and deterioration of meat quality. There are no published data about the prevalence and incidence of IBK, but from our observation outbreaks among cattle in Khartoum state are very common.

Although pink eye in non-fetal, it has a marked economic impact on the cattle industry. Costs resulting from decreased weight gain, milk production and treatment are very high. (\$ 150 million in US alone according to a 1995 study).

3/ Goals:

A- Prevention of IBKC in Khartoum State.

B- Preparation of a killed vaccine.

4/ Specific Objectives:

1. Study of the aetiology including the followings:-

a- Collection of different serotypes.

b- Improving the quality of media

- c-The ideal serological tests.
2. Maximize herd immune status through optimum nutrition, a proper vaccination program, and decrease of the distresses of weaning, shipping and handling.
 3. Minimize the concentration of *M. bovis* through the use an effective vaccine that will prevent disease and eliminate carriers, early disease detection.
 4. Effective treatment.
 5. Maintain an optimum irritant free environment

5/ Literature Review:

Infectious bovine keratoconjunctivitis (IBKC) is a disease which affects cattle of all ages and breeds. It is characterized by the inflammation of the cornea and conjunctiva and is considered as the most important ocular disease of cattle (*Baptista*, 1979). Many organisms have been incriminated in the aetiology of IBKC. These include bacteria, organisms of the psittacosis lymphogranuloma trachoma group and viruses. However, *Moraxella bovis* is generally accepted as being the principal aetiological agent of IBKC (*Mattinson and Cox*, 1982). The disease was reported to be seasonal in nature. It was reported in summer (*Hughes et al.*, 1965) and in early autumn (*Baldwin*, 1945). However, increasing winter incidence was reported in Britain (*Giles*, 1975). This disease was reported for the first time in the Sudan in 1971 and some cases were found to be associated with vitamin A deficiency (*El Sanousi et al.*, 1971; 1975).

Attempts to isolate *M. bovis* in pure culture are often met with difficulty, because the organism is usually found as a minority among other commensal bacteria inhabiting the bovine eye, and its presence could therefore be easily overlooked. Moreover non haemolytic forms of *M. bovis* colonies are not uncommon, and such forms are difficult to distinguish from other oxidase- positive organisms (*El Sanousi et al.*, 1984). Trials to purify the culture often lead to the loss of the organism. Stored cultures at 4 C liquefy and perish in a few days (*Breed et al.*, 1974). Such difficulties encountered in the isolation of *M. bovis* necessitated the search for a selective and/ or an indicator medium for *M. bovis* colonies among other contaminants.

Many vaccines on the market contain several types of *M. bovis* were shown to be [partially protective due to the ability of *M. bovis* to change type , the presence of other organisms in the eye lid tissue and

environmental factor that allow the organism to overcome the animal's immune system (Lepper et al 1995).

Vaccination with *Moraxella bovis* bacterin should be considered in herds with recurring problems with IBK (Jill Frank ,2003)

Reported results about commercial and autogenous pink eye vaccines by producer and veterinarian have been mixed from their use of these products (John and David 2004) .Vaccination of *M. bovis* has met with mixed results , Monovalent vaccines do not protect against heterologous serotypes , which multivalent vaccines have reduced the incidence of IBK but not the severity of the disease (Jill Frank , 2003) .

6/ Key Words:

Keratitis, Keratoconjunctivitis, *Moraxella bovis*

7/ Methodology:

a- The aetiology:

Trials to improve the media used for isolation by incorporation of various ingredients.

Improving method for identification by developing a presumptive,selective diagnostic media.

b-Serotyping of the isolates .

c- Antimicrobial sensitivity testing.

d-Preparation of a killed vaccine and the use of adjuvants.

e-Field trials to control the disease by vaccination prior to Summer.

8/ References:

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