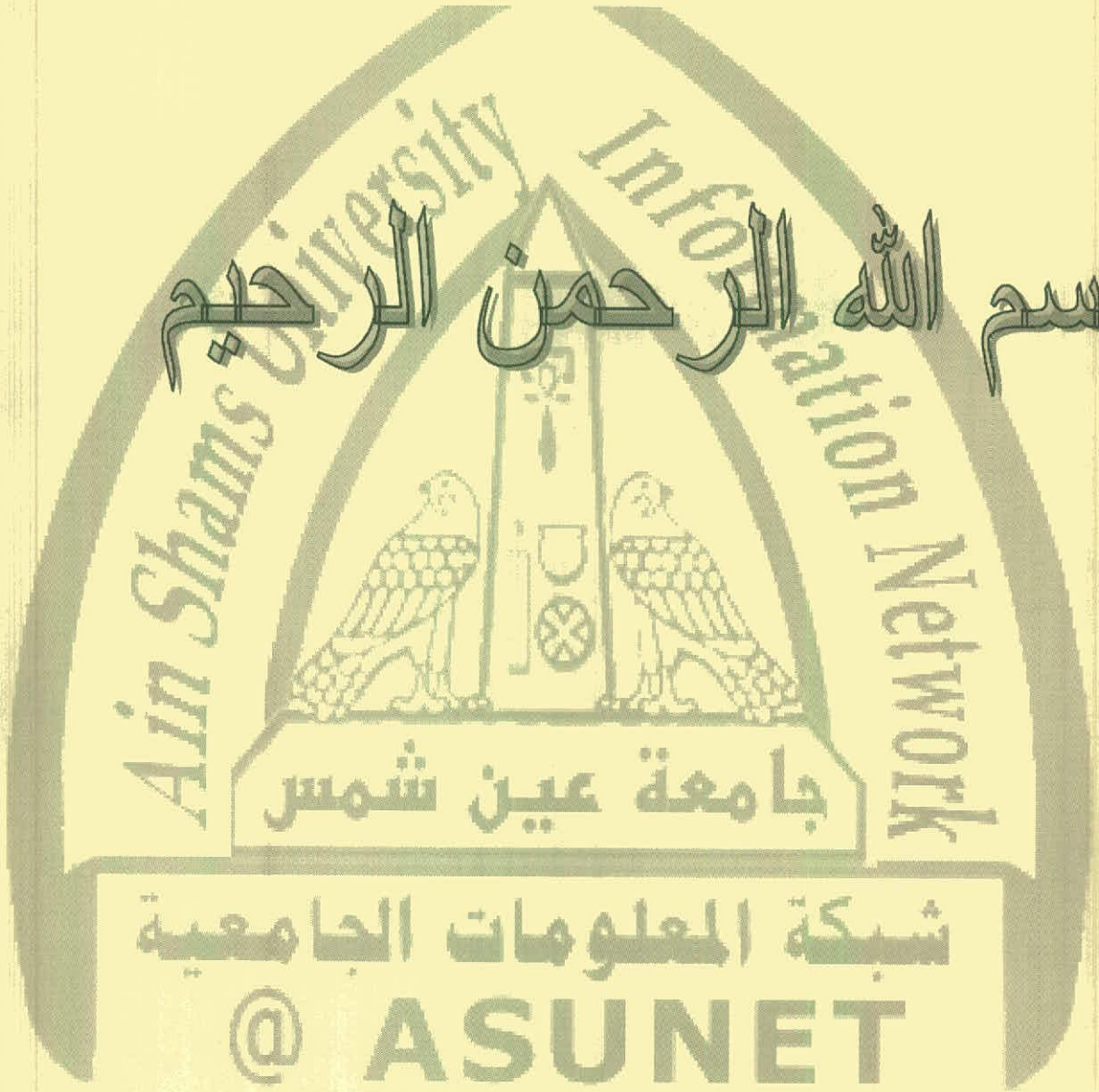
شبكة المعلومات الجامعية



بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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بالرسالة صفحات لم ترد بالاصل

Cairo University
Faculty of Veterinary Medicine
Department of Virology

STUDIES ON BOVINE ROTAVIRUS IN NEWBORN CALVES

Thesis presented
by

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For the degree of

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LIST OF ABBREVIATION

AGPT	Agar gel precipitation test
BRV	Bovine rotavirus
cDNA	Coloned deoxy ribonucleic acid
CF	Complement fixation
CIEOP	Counterimmunoelectro-osmophoresis
CPE	Cytopathic effect
CsCL	Cesium chlorid
DCIE	Discontinous counter-immunoelectrophoresis
DDW	Double distilled water
DEAE	Diethylaminoethyl
EDIM	Epizootic diarrhoea of infant mice
EDTA	Ethylene diamine tetra-acetate
ELISA	Enzyme linked immunosorbent assay
EM	Electron microscopy
FAO	Food agriculture organization
FAT	Flurescent antibody technique
FCS	Fetal calf serum
FITC	Flurocine isothiocyanate
HA	Haemagglutination
HI	Haemagglutination inhibition
HRPO	Horseraddish peroxidase
ICTV	International Committe on Taxonomy of Virus
ID	Immunodiffusion
IEO	Immunoelectrophoresis
IF	Immunofluorescence
LAT	Latex agglutination test
MA_{104}	Fetal rhesus monkey kidney cell
MDBK	Madin Darby Bovine Kidney
MEM	Minimal essential media
NCDV	Nebraska calf diarrhoea virus
OPD	Orthophenelene diamine
PAGE-SS	Polyacrylamid gel electrophoresis with silver staining
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction
PGE	polyacrylamid gel electrophoresis
PI	Post inoculation
RNA	Ribonucleic acid
RPHA	Reverse passive haemagglutination
SPF	Specific pathogen free
VNT	Virus neutralization test
VP_7	Virus $protein_7$
VP_4	Virus $protein_4$

Introduction

1. INTRODUCTION

Diarhoeal diseases are considered of the most important causes of death, in both man and animals particularly in the early stage of life. The major problem in calf husbandry is enteritis which causes great economic losses wide world among newborn calves.

Most of the literatures on calf diarrhoea, up to 1965, incriminated Escherichia coli as the primary pathogen of neonatal calf diarrhoea. In fact many factors are involved in the diarrhoeic cases, primary and secondary variables including diet, colostrum deprivation, management sanitation, stress, bacteria and viruses. Several calf problems have different etiological combinations of these factors.

Most of the recent studies were directed towards the isolation and identification of viruses which cause diarrhoea among newborn calves.

Rotaviruses are ubiquitous pathogens that represent a major cause of acute enteritis among young individuals of mammalian species (Ester et al., 1983). Because of the ubiquity of rotavirus in cattle populations, newborn calves yet remain susceptible to infection with rotavirus in the first few weeks of life (Mebus et al., 1973) and they were shown to be one of the most important agents of neonatal diarrhoea in calves (Tzipori, 1985).

Since the first description of bovine rotavirus in 1969, substantial evidence has accumulated to implicate this group of viruses as the cause of neonatal diarrhoea among calves, other animals and in humans.

The clinical manifestation of rotavirus illness are not sufficiently distinctive for diagnosis. The epidemiologic pattern may suggest the diagnosis, but laboratory confirmation is strongly required. Therefore,

detection of the virus or viral antigen and/or demonstration of serological response by detecting a specific antibodies are also required for diagnosis.

Many assays have been developed for the detection of rotaviruses in stools. Specimens from the first to fourth day of illness are ideal virus detection. However, shedding may continue for 9-21 days, depending on the duration of symptoms. Viral shedding usually coincides with the duration of scour, and diarrhoea can continue for 2-3 days after cessation of viral shedding (Riepenhoff-Taylor et al., 1981).

Although electron microscopy was employed for rotavirus detection in faeces (Bishop et al., 1974; Kapikian et al., 1980 and Bohl et al., 1984). with high specificity yet the costs for its applying is still high and not easy to be conducted in most cases.

Therefore, the aim of this work is to fulfil towards the following point:

Prevalnce of rotavirus infection between newborn calves in some localities and at different seasons by:

1- Direct detection of bovine rotavirus antigen in faecal samples collected from field cases (diarrheic cases) in certain Egyptian Governorates.

2- Isolation of bovine rotavirus from these faecal samples on tissue cultures.

3- Identification of the isolated bovine rotavirus using certain serological techniques.

Review Of Literature

2. REVIEW OF LITERATURE

2.1. History & Distribution of Rotavirus:

Tunner et al., (1973) reported that viral particles have the appearance of a reovirus were demonstrated in the intestinal contents and faeces of calves with diarrhoea in Victoria.

Woode and Bridger (1975) recorded that two viruses of neonatal calf diarrhoea, reovirus-like agent and calf coronavirus, have been discovered which appeared to play an important role in many cases of diarrhoea in U.K.

Dirksen and Bachmann (1977) studied the occurrence of both rotavirus and coronavirus infection in calves of two herds in the Munich area in 1977 and reported that rotavirus and coronavirus be active in the Federal Republic of Germany.

Moreno-Lopez and Jacobson (1978) stated that faecal samples collected from 25 calves with diarrhoea revealed rotavirus in 11 calves during the spring of 1977 in Sweden.

Moon et al. (1978) mentioned that infection with agents interpreted as causing diarrhoea, rotavirus is one of them alone or mixed with other agents in Iowa, United State of America

Srisuparbh (1978) studied the infectious causes of neonatal calf diarrhoea where he found rotavirus, as one of the various agents causing diarrhoea alone or mixed with others in Washington, U.S.A.

Wyn-Jones et al. (1978) found that from 14 calves with acute enteritis, 2 exhibited large numbers of rotavirus in faecal samples in German Federal Republic.