

**SURVEY OF FOOT DISORDERS AND IDENTIFICATION OF
BACTERIAL FAUNA FROM FOOT LESIONS OF CAPTIVE
ASIAN ELEPHANTS (*Elephas maximus*)**

M. KAMALANATHAN

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DEPARTMENT OF WILDLIFE SCIENCE
MADRAS VETERINARY COLLEGE
CHENNAI-600 007

CERTIFICATE

This is to certify that the thesis entitled "SURVEY OF FOOT DISORDERS AND IDENTIFICATION OF BACTERIAL FAUNA FROM FOOT LESIONS OF CAPTIVE ASIAN ELEPHANTS (*Elephas maximus*)" submitted in partial fulfillment of the requirements for the degree of **MASTER OF VETERINARY SCIENCE** in **WILDLIFE SCIENCE** to **TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY, CHENNAI** is a record of bonafide research work carried out by **Dr.M.KAMALANATHAN** under my supervision and guidance and that no part of this thesis has been submitted for the award of other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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(Dr.M.G.JAYATHANGARAJ, Ph.D.,)
Chairman

Place:

Date :

APPROVED

Chairman :


(Dr.M.G.JAYATHANGARAJ, Ph.D.,)

Members : 1.


(Dr.R.JAYAPRAKASH, Ph.D.,)

2.


(Dr.K.SENTHILKUMAR, Ph.D.,)

Place : CHENNAI

Date : 21-11-2016




(Dr. M.K. Narayanan)
External Examiner

ABSTRACT

Title : SURVEY OF FOOT DISORDERS AND
IDENTIFICATION OF BACTERIAL
FAUNA FROM FOOT LESIONS OF
CAPTIVE ASIAN ELEPHANTS
(*Elephas maximus*)

Name of the Student : M . KAMALANATHAN

Degree for which thesis is submitted : M.V.Sc.(WILDLIFE SCIENCE)

Name of the Chairman : Dr. M. G. Jayathangaraj
Professor and Head,
Teaching Veterinary Clinical Complex,
Veterinary College and Research Institute,
Tirunelveli – 627 358

University : Tamil Nadu Veterinary and Animal
Sciences University,
Chennai – 600 051

This study program was related to the examination of the foot region and identification of the associated bacterial fauna in different types of foot lesions encountered in captive Asian elephants of Tamil Nadu State, in addition to the framing of management related suggestions.

The captive elephants investigated in this study (n=15) were located in different temples in Kanchipuram (n=3), Palani (n=1), Myladudurai (n=2), Vellore (n=1), Virudhunagar (n=1) and

Sriperumbuthur (n=1), in addition to the elephants belonging to Arignar Anna Zoological Park at Vandalur (n=3) and private elephants (n=3).

During the systematic examination of foot regions in the captive elephants, different types of foot related disorders were identified in fourteen captive elephants and foot disorders that were encountered in this study comprised of split nails, cracked nail, uneven / overgrown nails, damaged nail, abrasion of sole (uneven wear), excessive foot pad growth, nail abscess, sole abscess (pad abscess), chronic wound (necrotic wound), cuticular over growth (cuticular leafing), bacterial pododermatitis, foot rot involving extended areas and wound with abrasion on the skin above the foot region.

Culture and appropriate biochemical tests were carried out with swabs obtained from the foot lesions (nail abscess, sole abscess, chronic wound and foot rot) encountered among the captive elephants under this study.

Different types of bacterial organisms were encountered during this study, namely *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Streptococcus agalactiae*, *Bacillus cereus*, *Klebsiella pneumonia*, *Proteus mirabilis*, *Escherichia coli*, *Salmonella enteritidis* and *Clostridium tetani*.

Microbial organisms comprising of *Escherichia coli*, *Salmonella enteritidis* and *Bacillus cereus* were revealed in the floor of enclosures, whereas *Bacillus cereus* and *Proteus mirabilis* were revealed in swabs obtained from the chains used for restraint.

Different types of biochemical tests namely indole, methyl red, voges-proskauer, citrate utilization, oxidase, catalase, coagulase, urease, nitrate reduction, Triple sugar iron test and lead acetate tests were carried out towards the identification of the appropriate organisms from different types of lesions at the foot regions, in this study.

Antibiotic sensitivity tests carried out with the samples obtained from the foot lesions revealed different types of antibiotics with varying sensitivities to the related organisms that were encountered during this study and among the sensitive antibiotics, enrofloxacin was found to be

highly sensitive, followed by azithromycin as well as amikacin. Ampicillin was found to be highly resistant, followed by amoxicillin.

Non-significant changes were noticed between the age group of above twenty five years and the age group of below twenty five years, with regard to the encountering of foot disorders in this study.

Major foot ailments (Nail abscess, sole abscess, foot rot, chronic wound and bacterial pododermatitis) were noticed in 24.53% of the foot disorder-related incidences and it was 75.47%, with regard to the minor foot disorder-related incidences.

Fore limbs related foot disorders were noticed in 42.86% of the affected animals and hind limb related foot disorder were noticed in 21.43% of the affected animals and the both limbs-related foot disorders were noticed in 35.71% of the affected animals.

Among the nail, foot pad, cuticle and skin related foot disorders, it was found that nail related foot disorders had number of incidences (62.26%) and skin related foot disorders had least number of incidences (7.55%).

Keywords – Elephants, foot disorders, *Staphylococcus Sp.*, Bacterial Fauna, Antibiotic sensitivity test