

Table of Contents

LIST OF FIGURES IV

LIST OF TABLES V

LIST OF ABBREVIATIONS VI

CHAPTER 1 1

GENERAL INTRODUCTION 1

1.1. *The Asian elephant's (problematic) status* 1

1.2. *The elephant endotheliotropic herpesvirus* 2

 1.2.1. THE BEGINNING OF AWARENESS 2

 1.2.2. THE EEHV VARIANTS AND SEROTYPES 3

1.3. *The EEHV haemorrhagic disease* 6

1.4. *Coagulation factor VII and F7 gene* 9

1.5. *Aim of the study* 11

CHAPTER 2 13

 ELEPHANT ENDOTHELIO TROPIC HERPESVIRUS IMPACT IN THE EUROPEAN ASIAN ELEPHANT (*ELEPHAS MAXIMUS*) POPULATION:
 ARE HEREDITABILITY AND ZOO-ASSOCIATED FACTORS LINKED WITH MORTALITY? 13

2.1. *Abstract* 14

2.2. *Introduction* 14

2.3. *Materials and methods* 16

 2.3.1. DATA CLEANING, SELECTION AND ANALYSIS 16

 2.3.2. DATA COLLECTION 17

2.4. *Results* 18

 2.4.1. DESCRIPTIVE ANALYSIS 18

 2.4.2. SURVIVAL AGE AND GENDER RELATION 19

 2.4.3. FATHER AND MOTHER DISTRIBUTION OF EEHV-HD FATAL CASES 21

 2.4.4. ZOO DISTRIBUTION OF EEHV-HD FATAL CASES 22

2.5. *Discussion* 24

2.6. *Conclusions* 27

Table of Contents

CHAPTER 3 29

 ASSESSING COAGULATION PARAMETERS IN HEALTHY ASIAN ELEPHANTS (*ELEPHAS MAXIMUS*) FROM EUROPEAN AND THAI POPULATIONS... ..29

 3.1. *Abstract* 30

 3.2. *Introduction*..... 30

 3.3. *Materials and methods* 33

 3.3.1. COAGULATION TIME AND FIBRINOGEN MEASUREMENTS—CLINICAL HAEMOSTASIS EVALUATIONS 34

 3.3.2. PLATELET COUNTS 35

 3.3.3. SAMPLE COLLECTION FOR THE ANALYSIS OF THE COAGULATION F7 GENE 35

 3.3.4. DNA EXTRACTION 35

 3.3.5. AMPLIFICATION AND SEQUENCING OF DNA..... 36

 3.3.6. DATA SELECTION AND ANALYSIS 37

 3.4. *Results* 38

 3.4.1. OVERVIEW OF THE STUDY POPULATION 38

 3.4.2. INFLUENCE OF LOCATION AND EEHV-HD STATUS ON COAGULATION TIME, FIBRINOGEN CONCENTRATION, AND PLATELET COUNTS 38

 3.4.3. INFLUENCE OF GENDER AND AGE CLASS ON COAGULATION TIME, FIBRINOGEN CONCENTRATION, AND PLATELET COUNTS..... 41

 3.4.4. COAGULATION FACTOR VII GENE (F7) 42

 3.5. *Discussion* 45

 3.5.1. FAST DIAGNOSTIC ANALYSER (VSPRO) 46

 3.5.2. COAGULATION TIMES 47

 3.5.3. FIBRINOGEN 48

 3.5.4. PLATELETS 49

 3.5.5. GENETIC ANALYSIS OF F7 GENE 49

 3.6. *Conclusions*..... 50

CHAPTER 4 53

GENERAL DISCUSSION 53

CONCLUSIONS 60

FUTURE PERSPECTIVES 61

SUMMARY 63

ZUSAMMENFASSUNG 65

BIBLIOGRAPHY..... 67

SUPPLEMENTARY MATERIAL..... 81

LIST OF PUBLICATIONS 101

ACKNOWLEDGMENTS 103

FUNDING SOURCES 105

INTERESSENSKONFLIKTE 105

SELBSTÄNDIGKEITSERKLÄRUNG..... 105