

수의학 교과과정

미국 Cornell 수의과대학의 교과과정

남 명 진

한국에서 수의과대학이 4년제에서 6년제로 바뀐다는 사실은 엄청난 기쁨과 희망을 주고 있다. 그것은 부족하지만 그런대로 자신의 역할을 수행할 수 있는 수의사를 배출할 기본적인 토양이 마련되기 때문이다. 생각을 해보면 4년제 수의과대학에서 1학년 교양 과정을 대학생의 전유물인 해방감과 자유인이라는 분위기 속에서 보내고 2학년부터 어렵고 어려운 생화학/생리학을 그것도 영어로 된 교과서로 배우니 참으로 이해하기가 힘들었다. 원서 한 페이지, 한 페이지를 읽고 이해하는 것이 엄청나게 힘들었다는 기억이 절로 난다. 그럴 수 밖에 없는 것이 생화학을 이해하려면 기본적인 background인 무기, 유기, 분석화학을 배우고서 가능했던 것인데 그러한 과정없이 바로 들어갔으니 이해할 만도 한 사실이다.

필자는 미국에서 박사학위를 마치고 postdoctoral training 과정에 들어가기 위해서 여러 의과대학에 지원을 하였을 때 많은 사람들이 "Dr. 남은 수의과대학을 졸업하여서 DVM이 되었는데 Undergraduate는 어떤 분야에서 공부하였느냐?"라고 물어보곤 했다. 이때마다 어찌 대답을 해야될지 참으로 곤욕스러웠다. 그러면 과연 학제면에서 한국에서 4년제 대학을 졸업하고서 학위를 DVM으로 받았다고 얘기할 수 있을까? 서양인의 관점에서는 "No"이다. BS를 받았다고 얘기해야 하는 것이 옳을 것이다. 이러한 사실은 흡사 중국에서 2년제 의과대학을 졸업하고서 MD라고 행세하는 것과 비슷한 경우일 것이다.

미국에서 "Professional School"은 4년제 학부 즉,

Undergraduate를 마치고서 들어가는 의대, 치대, 수의대, 법대를 지칭한다. 굳이 한국과 비교한다면 예과 과정을 마치고서 본과 과정에 들어가는 것인데 다른 점은 예과 과정이 4년이상이고 예과를 마쳤다고 해서 본과로 바로 들어가는 것이 아니고 일정한 사회경험을 하면서 본과로 들어가기 위한 시험을 보아서 거기서 우수한 성적을 가진 사람만이 자신의 성적과 그 밖의 다른 사항을 고려해서 본과에 지원하는 것이다.

그래서 본과 즉, Professional School을 졸업해서 의사, 수의사, 치과 의사가 되면 이들의 학력은 Ph. D를 받은 사람과 동등하게 된다. 즉, 의과대학을 졸업한 MD가 기초연구를 위해서 실험실에 가는 경우는 Graduate School(대학원)에서 박사과정을 마친 Ph. D가 Postdoctoral Position으로 가는 경우와 같게 된다. 그러므로 미국에서는 학부를 마치는 학생들이 대학원 박사과정에 들어가서 Ph. D 학위를 받거나 의대, 치대, 수의대에 들어가서 각각 Medical Doctor, Doctor of Dental Surgery, Doctor of Veterinary Medicine 학위를 받는 것이다.

이번호 수의사회지에서는 한국 수의과대학이 6년제가 되는 때와 맞추어 교육과정 개편에 참고가 되도록 미국에서 가장 역사가 깊고 최고의 수의과대학이라 일컫는 Cornell 대학교 수의과대학의 교과과정에 대해서 서술하겠다. 물론, 한국의 현실과는 너무나 커다란 차이가 있어서 미국의 교과과정을 한국에 적용시키는 것은 참으로 커다란 문제가 있으나 한국의 현실을 참작하여서 할 수 있는 것은 한번 시도하는 것이 좋지 아니한가 생각한다.

Cornell 수의과대학에 입학하기 위해서는 4년제 학

부에서 최소한 90학점을 따라 한다. 물론 4년제 대학은 학문적으로 인정을 받은 수준이상의 대학을 일컫는다. 90학점중에서 최소한 37학점은 다음 과목에서 따라 한다.

과 목	최소학점
영어 작문	6
생물학 (실습포함)	6
무기 또는 일반화학 (실습포함)	6
유기화학 (실습포함)	6
생화학 (교학년용)	4
물리 (실습포함)	6
일반 미생물학 (실습포함)	3
합 계	37

수의과대학의 Curriculum은 학생들이 교육과정에서 능동적으로 가르침을 받을 수 있게 구성되어 있으며 기초분야를 익혀서 그것을 임상과 연관시킬 수 있도록 학생들에게 과목선택의 폭을 넓혀주고 있다.

첫 1학년년부터 학생들은 실지의 임상 case를 접함으로써 과학적으로 분석할 수 있는 능력을 배양하게 된다. 그렇게 하기 위해서 학생들을 소그룹으로 나누어서 지도강사의 지도하에 임상에서 파생되는 문제를 풀기 위해, 서로 도우면서 공부하고 있다. 학생들은 tutorial session, 강의, 실험실 실습, 도서관에서의 검색, 컴퓨터 simulation과 그밖에 교수들이 개발한 교육자료를 통해서 수많은 정보와 지식에 접근함으로써 정상상태와 비정상상태의 현상을 이해할 수 있게 된다.

그래서 curriculum은 학생들이 개념을 이해하고 생각할 수 있게 문제를 해결할 수 있는 자세를 갖추게 상호협동작업을 개발할 수 있게 설계되어 있다. 또한 수의학에 관련되는 문제들 즉, 의사소통 방법, 환주와의 관계, 윤리, 공중보건, 병원경영 등에 관련한 새로

운 교육 program이 계속 개발되고 있다.

Curriculum은 크게 Foundation Course와 Distribution Course로 나뉜다. Foundation Course은 학생들이 꼭 선택해야 하는 course인데 전체 4년과정 중 70%를 차지하며 다음 7가지 분야로 나뉘어져 있다.

① Animal Body : 해부학, 조직학, 발생학, 방사선학과 imaging, 외과의 소개

② Genetics and Development : 세포 교감 및 운동, morphogenesis와 성장, 종양 발생학, 성 결정 및 초기 발달

③ Function and Dysfunction : 생리학, homeostasis, 생화학, 세포생물학, 세포손상과 회복, 조직학, 혈액학, 약리학

④ Host, Agent, and Defense : 염증과 감염, 면역체계와 면역병리학, 조직학, 세균학, mycology, 기생충학, virology, 항미생물요법, 질병조사

⑤ Animal Health and Disease : 병리학, 임상약리학, 내과, 외과학, 영양학 등과 임상훈련의 통합

⑥ Animal, Veterinarians, and Society : 진단검사, 윤리문제, 임상유전학, 의사소통방법, 환주면접과정, 정보관리, 사람과 동물관계, 개개동물이나 동물집단에서의 보건관계, 수의공중보건학, 전문분야에서의 자아발전, 수의사의 사회에 대한 책임, 병원운영방법

⑦ Clinical Rotation : 학생들은 대학 동물병원에서 모든 임상 service에 대하여 지도받는다. 3학년부터 4학년까지의 학생들은 응급의학, 마취학, 피부학, 대동물 내과학, 대동물 외과학, 안과학, 병리학, 방사선학, Community Practice Service, 소동물 내과학, 소동물 외과학을 배운다.

Foundation Course에서는 학생들이 소그룹으로 나누어서 지도강사의 지도하에 공부하고 있다. 임상

■ 4년간의 수의과 대학 curriculum은 다음과 같다.

학 년	1 학기	2 학기
1 학년	Animal Body*, Genetics & Development*	Distribution courses : Function & Dysfunction (I)*
2 학년	Function & Dysfunction (II)*, Host, Agent, and Defense*	Distribution courses : Animal Health and Disease (I)*
3 학년	Animal Health and Disease (II)*	Distribution courses : Clinical Rotation
4 학년	Clinical Rotation	Distribution courses : Clinical Rotation

* Animal, Veterinarians, and Society 분야가 포함된다.

case를 바탕으로 하는 훈련은 학생들로 하여금 임상에서 생기는 문제들을 기초분야의 지식을 동원하여 해결할 수 있게끔 하는 것이다. 그래서 매주 3-4회 tutorial session이 계획되어 있다. 이러한 tutorial session은 강의, 실험실 실험, 토의 등에 의해 더욱더 보완되고 있다. 교수들은 이러한 tutorial session에서 파생되는 질문에 할 수 있게 준비하고 있다. Tutorial session은 보통 오전에 하여, 오후시간을 독자적인 공부를 할 수 있게 한다. 임상을 바탕으로 공부를 함으로써 학생들이 기초와 임상분야에서의 지식을 적절히 통합할 수 있으며, 초기 교과목부터 임상과 결부한 사고방식을 갖게 된다. 이러한 tutorial session과 같은 교육프로그램에서 학생들이 배우는 과정에 적극적으로 참여하며, 의사소통, 지식의 통합, 분석에서 스스로 자기자신을 개발하고 있다.

Foundation Course에 포함하는 과목과 과목개요는 다음과 같다.

Animal Body : 1학년 1학기, 12학점

This course is designed to enable students to understand the principles of veterinary anatomy at the gross, microscopic, and ultrastructural levels. Developmental anatomy is emphasized to the extent that it reflects determination of adult form and species differences. Radiologic and related imaging techniques are used throughout the course to assist in the understanding of normal structural anatomy. Understanding of the anatomic basis of common surgical procedures is achieved during the various dissection procedures. The course is based on tutorials with significant emphasis on practical laboratories.

Animals, Veterinarians, and Society (Part A) : 1학년 1학기, 1학점

This course is the correlate for Animal Body. This is a laboratory-based course that teaches the physical examination of four species (dog, cat, cow, and horse). The class is divided into smaller groups and each group meets for two hours each week during the first eleven weeks. The skills of auscultation, percussion, palpation, and observation are taught along with clinically related diagnostic procedures.

Genetics and Development : 1학년 1, 2학기, 8학점

This course emphasizes cellular and genetic control mechanisms operating during mammalian development and adulthood. Four basic processes -- cell proliferation, cell movement, cell differentiation, and morphogenesis -- are essential to all living systems but may be regulated differently in embryonic and mature cells and tissues. Tutorial cases are used to initiate explorations of the mechanisms that regulate these processes in embryonic, normal adult, and transformed (cancer) cell populations. Tutorial sessions are complemented by lectures, laboratories, minicase discussions, and modules.

Animals, Veterinarians, and Society (Part B) : 1학년 1학기, 1학점

This course is the correlate for Genetics and Development. It enters into a study of ethical issues related to animal use, animal welfare, animal genetics, clinical application of genetics, genetics counseling, and clinical day-to-day ethics. The course meets for one 2-hour session each week.

Function and Dysfunction: Part I : 1학년 2학기, 9학점

This course is designed to develop students understanding of how an animal maintains itself as a functional organism; how this is achieved through the integration of different functional organ systems; how tissue structure relates to tissue function; how injury alters structure and leads to dysfunction, manifested as clinical signs; how organ function can be assessed; and how it can be modulated pharmacologically. The course incorporates aspects of physiology, biochemistry, cell biology, histology, pathology and histopathology, clinical pathology and pharmacology.

Animals, Veterinarians, and Society (Part C1) : 1학년 2학기, 1학점

This course is the correlate for Function and Dysfunction: Part I. The central goal of this course is to provide students with the interpersonal skills and techniques necessary to communicate effectively with clients. In addition, students will be provided an opportunity to study

the human-animal bond, animal death, and grief counseling. This course also provides opportunities to practice client interviewing skills and to participate in a home or farm visit.

Function and Dysfunction: Part II : 2학년 1학기, 7학점

A continuation of Function and Dysfunction: Part I.

Animals, Veterinarians, and Society (Part C2) : 2학년 1학기, 1학점

This course is the correlate for Function and Dysfunction, Part II. This course provides for understanding the importance of the medical record, the diversity of clients, employees, and society in general, and a session on alternative medicine and its various practices. Studying how to critically read and evaluate clinical studies and journal articles is also provided.

Host, Agent, and Defense : 2학년 1학기, 12학점

This course is divided into six sections: the host response, intracellular environment, extracellular environment, somatic environment, external environment, and surrounding environment. Using this approach, students develop an understanding of the host response to insult; a familiarity with groups of important pathogens; an understanding of how pathogens manipulate the host and how the host defends itself against attacks; and an understanding of the roles played by the external environment and human intervention in the epidemiology of infectious organisms.

Animals, Veterinarians, and Society (Part D) : 2학년 1학기, 1학점

This course is the correlate for Host, Agent, and Defense. This course will emphasize maintaining health in both individuals or populations of animals and humans. Topics will include animal bites, nosocomial infections, rabies control programs, vaccines and vaccine reactions, zoonotic diseases, and integrated health maintenance programs.

Animal Health and Disease: Part I : 2학년 2학기, 10학점

This course integrates the clinical sciences of medi-

cine, surgery, anesthesiology, radiology, and theriogenology, which are themselves integrated subjects, with systems pathology and relevant aspects of applied pharmacology. The course will be presented on a systems basis moving from clinical signs of alteration in function, to pathophysiology of clinical signs, to strategies for diagnosis and treatment. Specific examples will be used to establish a cognitive framework and knowledge of the most important diseases. This course will provide a sound foundation for clinical rotations in Foundation Course VI. It builds upon the strengths developed in earlier courses by an increased exposure to case examples in a more directed way, taking advantage of the diversity of skills and special knowledge of both faculty and students. A variety of educational techniques will be used, including lectures in which interaction is encouraged, laboratories, demonstrations, case discussions, and autotutorials.

Animals, Veterinarians and Society (Part E) : 2학년 2학기, 1학점

This course is a correlate with Animal Health and Disease. The course will examine governmental regulation of the veterinary profession, including proper drug usage, extra label drug use (FDA), controlled substances (DEA), substance abuse, professional liability and malpractice insurance, professional and unprofessional conduct, hazardous materials in the workplace (OSHA), and environmental issues (EPA). Also included will be sessions relating to controlling and preventing the spread of animal diseases and the role of USDA and specifically APHIS in these regulatory functions.

Animal Health and Disease: Part II : 3학년 1학기, 20학점

A continuation of Animal Health and Disease: Part I.

Community Practice Service-Medicine : 2학점, Clinical Rotation의 필수과목

The Community Practice-Medicine Service is structured to provide supervised clinical experience in the practice of small companion animal medicine. The course is conducted in the Small Animal Clinic of the

Veterinary Medical Teaching Hospital. Students interact directly with clients presenting their pet for primary medical care. Under the supervision of the clinical faculty and staff, the students are expected to formulate and carry out plans for the diagnostic evaluation and medical management of these patients. After review, students explain their plans to the clients and provide follow-up care and management of these patients.

Community Practice Service-Surgery and Anesthesiology : 2학점, Clinical Rotation의 필수과목

Basic principles of anesthesiology and surgery are emphasized in the clinical rotation. Under direct staff supervision, students will anesthetize and perform surgical procedures on patients presented to the Small Animal Clinic for neutering and minor elective procedures. Students will be responsible for all aspects of patient care during their hospital stay and will be expected to fully participate in client communications. Ordinarily, this course will precede Anesthesiology Service and Small Animal Surgery Service (soft tissue component).

Small Animal Medicine : 3학년 2학기, 4학년 1/2학기, Clinical Rotation의 필수과목

The Small Animal Medicine Service is structured to provide supervised clinical experience in the practice of companion small animal medicine. The course is conducted in the Small Animal Clinic of the Companion Animal Hospital. Students interact directly with clients presenting their pets for primary or referral medical care. Under the supervision of the clinical faculty and staff, the students are expected to formulate and carry out plans for the diagnostic evaluation and medical management of these patients. After review, students explain their plans to the clients and provide follow-up care and management of these patients.

Small Animal Surgery Service : 3학년 1/2학기, 4학년 1/2학기, 4학점, Clinical Rotation의 필수과목

A clinical service rotation, this course exposes the student to the practice of surgery under hospital conditions. Students participate in the diagnostic techniques; planning of therapy; and daily care of dogs, cats, and exotic

species under the direction of a faculty veterinarian. Students assist experienced surgeons in the operating room and, with house-officer supervision, are responsible for patients undergoing elective ovariohysterectomy or castration. Client communications and the basics of efficient practice are also emphasized.

Ambulatory Medicine Service : 4학점, Clinical Rotation의 필수과목

A clinical service rotation in which students accompany ambulatory clinicians on farm and stable calls and learn the skills and procedures necessary for operation of a modern veterinary practice offering primary care to large animal clients. Routine herd health visits are conducted for cattle, horses, sheep, goats, and swine. Reproductive evaluations (including pregnancy and fertility examinations), nutritional evaluation, and disease prevention are stressed. Herd health programs also include vaccinations, parasite control, mastitis prevention, and routine procedures such as castration and dehorning. With appropriate herds, analysis of computerized performance data is conducted and discussed with the owner. In addition to assisting with routine scheduled work, students participate in diagnosis and medical or surgical treatment of ill or injured animals. This includes rotating assignments for night and weekend duty.

Large Animal Medicine Service : 3학점, Clinical Rotation의 필수과목

Students assigned to this service will assist the faculty and house staff of the Large Animal Medicine service in the diagnosis and care of patients admitted to the service. It is hoped that students working on this service will acquire knowledge and skills in history taking, physical examination, election and completion of appropriate ancillary tests, diagnosis, treatment and patient care. Daily rounds and discussions are used to monitor patient progress and further educate students.

Large Animal Surgery Service : 4학점, Clinical Rotation의 필수과목

This clinical rotation is structured to provide supervised clinical experience in the practice of large an-

imal surgery. Under the direction of faculty and house staff, students participate in the diagnosis, surgical treatment, and care of patients presented to the Large Animal Clinic. Training through patient care is supplemented by formal rounds and by didactic instruction.

Anesthesiology Service : 3학점, Clinical Rotation의 필수과목

This course is designed to provide clinical experience in the use of anesthetics in small companion animals, horses, and some food animals. The students participate in selecting suitable anesthetic techniques for patients in the Veterinary Medical Teaching Hospital and then implement those techniques under the supervision of residents and faculty. The goal is for students to learn the skills necessary to perform safe anesthesia in a modern veterinary practice.

Dermatology Service : 2학점, Clinical Rotation의 필수과목

During this clinical rotation, students participate in the diagnosis and management of skin disorders in small and large animals. Patients are examined by appointment and through consultation with other hospital services.

Ophthalmology Service : 2학점, Clinical Rotation의 필수과목

This course combines clinical experience with beginning skills in diagnostic ophthalmology. Students learn how to apply the ophthalmic diagnostic tests. The feeling of performing a good ocular examination is the goal of this rotation. Confidence in using direct and indirect ophthalmoscopes, slit lamps, tonometers, gonioscopes, conjunctival cytology, and surgery comes with practice introduced in this rotation. Students are required to review the introductory orientation videotapes in the Autotutorial Center entitled *Ocular Examination I and II* before the start of the rotation. This rotation provides surgical experience and consultations. A high percentage of the consultations are referral cases that usually challenge the service. Adequate routine case material is presented to prepare most students for practice.

Pathology Service : 2학점, Clinical Rotation의 필수과목

This course involves the hands-on diagnostic necrop-

sies of most mammalian species that are presented to the pathology necropsy room and of avian species that are admitted to the avian and aquatic animal medicine necropsy room. Students work in groups of three to five for the two-week rotation. Necropsies are performed under the guidance of pathology faculty, residents, or interns. Students prepare written reports of necropsies performed, review microscopic hematology and cytology slides, perform urinalyses, and discuss case studies.

Radiology Service : 2학점, Clinical Rotation의 필수과목

A two-week clinical rotation in the Radiology Section of the Veterinary Medical Teaching Hospital. Students will use radiographic, CT, ultrasonographic, and nuclear medicine imaging techniques to evaluate animal patients under treatment in the Veterinary Medical Teaching Hospital. With guidance of radiology faculty and technical staff, students obtain and interpret radiographic and ultrasonographic studies. Two 3-hour laboratory sessions are given to allow hands-on experience in patient positioning and radiographic technique. An autotutorial teaching film file is used to familiarize students with radiographic examples of common diseases of large and small animal species. Small-group discussions are scheduled to present and discuss current cases. Radiation safety aspects regarding the veterinary practitioner are emphasized.

Fourth-Year Seminar : 4학년 1/2학기, 1학점, Clinical Rotation의 필수과목

The aim of this course is to give the student the responsibility and opportunity of selecting and studying disease entity on the basis of a case or series of cases or to give the student the responsibility and opportunity of conducting a short-term, clinically oriented research project under the direction of a faculty member. In either case, an oral report will be presented at a weekly seminar. A written report will also be submitted at the time of the seminar. All participants are encouraged to foster an atmosphere in which discussion, exchange of ideas, and the airing of controversial opinions might flourish.

Distribution Course는 Curriculum의 30%를 차지하며 학생들이 자신의 관심사항과 좀더 깊이 공부하고자 하는 방향에 따라 course를 선택할 수 있다. 다음 course들이 제공된다. 세분화된 해부학, 동물관리학, 사회와 수의사, 유전학과 발달학, 생리학과 병리학, 미생물학과 면역학과 · 기생충학, 동물보건과 질병, 사고방법 등이 포함된다. Distribution Course는 2학기의 전반부에 개설되어 있으며, 1-2학년에서는 기초분야에 관련되어 있다. 다음과 같은 course들을 Distribution Course에서 학생들이 선택할 수 있다.

1. 해부학 분야

Anatomy of the Carnivore
Anatomy of the Horse
Anatomy of the Ruminant
Neuroanatomy and Clinical Neurology
Comparative Anatomy: Pattern and Function
Seminars in Comparative Anatomy

2. 생화학 분야

Physiological Nutrition
Twenty Questions on Extracellular Matrix
Proteolysis in Physiological Function and Dysfunction
Molecular and Genetic Basis of Metabolic Disorders in Animals
Regulation of Skeletal Metabolism
Mechanics of Animal Movement
Genetic Basis of Eye Diseases
Growth Factor-Coupled Signal Transduction
Molecular Biology and Immunology of Host-Parasite Interactions

3. 생리학 분야

Fundamental Aspects of Embryo Transfer
Thermal Regulation and Exercise
Physiology of Pregnancy
Fundamental Ruminant Digestion
Current Concepts in Reproductive Biology
Neuroendocrine-Immune Interactions
Topics in the Physiology and Pathophysiology of the Digestive Tract: Simple Stomached Animals
Physiological and Pharmacological in the understanding and treatment of Diarrhea

Physiology and Pharmacology in the Understanding and Treatment of Diabetes

4. 약리학 분야

Drug Handling in the Body
Autonomic Pharmacology
Antimicrobial Drug Therapy in Veterinary Medicine
Fundamental Principles of Vertebrate Central Nervous System Pharmacology
Clinical Pharmacology

5. 병리학 분야

Surgical Pathology
Wildlife Pathology
The Pathogenesis of Significant Bacterial Infections of Large Domestic Animals

6. 감염병 분야

Approaches to Problems in Canine Infectious Diseases
Foreign Infectious Diseases of Animals
Feline Infectious Diseases
Epidemiology of Infectious Diseases

7. 조류 분야

Introduction to Avian Biomedicine
Diseases of Birds
Avian Medicine and Surgery

8. 어류 분야

Fish Health Management
Management of Aquarium Systems
Aquavet I: Introduction to Aquatic Veterinary Medicine
Aquavet II: Comparative Pathology of Aquatic Animals

9. 임상 분야

외과분야
Techniques in Equine Surgery
Techniques in Food Animal Surgery
Small Animal Orthopedic Surgery
Equine Soft Tissue Surgery
Medical and Surgical Problems of Dairy Cattle: Emphasis on the Individual Animal

말분야

Introduction to Equine Practice

Advanced Equine Lameness
Current Therapy in Equine Reproduction
Special Problems in Equine Medicine
Behavior Problems of Horses
Fundamental Principles in Anesthetic Techniques for Equine or Mixed Animal Practice
Theriogenology 분야
Production Animal Theriogenology
Small Animal Theriogenology
Theriogenology Service
Small Animal 분야
Small Animal Clinical Oncology
Special Problems in Small Animal Medicine
Behavior Problems of Small Animals
Veterinary Parasitology: Small Animals
Fundamental Principles and Anesthetic Techniques for Small Animal Practice
Large Animal 분야
Introduction to Large Animal Ambulatory Practice
Disorder of Large Animal Neonates
Veterinary Parasitology: Large Animals
Laboratory Animal 분야
Introduction to Nontraditional Companion and Laboratory Animals
Laboratory Animal Medicine
Exotic Animal 분야
Clinical Management of Native Wildlife

Clinical Wildlife and Exotic Animal Medicine
Veterinary Aspects of Captive Wildlife Management
Farm Animal 분야
Sheep and Goat Medicine
Dairy Production Medicine Quality Milk
기타 분야
Management of Fluid and Electrolyte Disorders
Advanced Clinical Neurology
Veterinary Clinical Immunology
Veterinary Dentistry
Clinical Ophthalmology
Cardiology Service
Osteoarthritis
연구 분야
Special Opportunities in Clinical Veterinary Medicine
Special Projects in Veterinary Medicine
Research Opportunities in Veterinary Medicine

10. 기타

The Literature and Subject Matter of Natural History
Veterinary Medicine in Developing Nations
Clinical Biostatistics for Journal Readers
Poisonous Plants
Practice Management
International Animal Agriculture
Introduction to the Professional Literature
Introduction to Community Practice Service
Senior Seminar

BST에 대하여

부스틴-에스와 바디컨디션(BCS)과의 관계를 알고 싶습니다.

바디컨디션이란 체중의 증감이 아닌 체지방의 축적정도를 표시하는 것입니다. 젖소는 체지방을 이용하여 우유를 생산하는데 바디컨디션이 3.0 이상이 되면 젖소에 무리없이 큰 효과를 기대할 수 있지만 2.5 이하가 되면 큰 효과를 볼 수 없었으며 다음 비유기에 정상적인 상태로 도달되기 어렵고 대사성 질병에 걸릴 확률이 높습니다. 결론적으로 부스틴-에스를 투여할 경우 체내의 체지방 분해가 많아지므로 적정 사양관리가 이루어지지 않을 경우 바디컨디션이 떨어질 수 있습니다.