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Pakistan's seed sector in acute need of revamping

AVN Report

KARACHI - According to business people, Pakistan's seed sector has to be updated, and the role of the Federal Seed Certification and Registration Department (FSC&RD) needs to be redefined.

In his recent statement, Ahmad Jawad, Vice President, Pakistan Businesses Forum (PBF), said that seed cooperation with China under the China-Pakistan Economic Corridor (CPEC) would help improve agricultural productivity. "We need to produce larger volumes of certified seeds at affordable prices and streamline the distribution of quality seeds among Pakistani farmers," he said.

Jawad lamented that the department currently provided registration of varieties and certification of seeds only.

According to him, the registration benefitted neither the breeder nor the farmer; hence it was a futile exercise.

"Similarly, seed certification has become largely irrelevant for its lax implementation because farmers rely on their judgment rather than a tag issued to them," he said.

He highlighted that companies usually obtain these certification tags from the department to avoid unwarranted inspections rather than to add value to their businesses.


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KP CM stresses the rapid completion of University of Veterinary and Animal Sciences

AVN Report

SWAT - Chief Minister Khyber Pakhtunkhwa Mahmood Khan recently directed the concerned authorities to complete all the pre-requisites for the groundbreaking of the project as soon as possible while stressing the need for rapid progress on the establishment of the University of Veterinary and Animal Sciences, Swat. He said that this project is of vital importance owing to the growing need for veterinary education in the Malakand Division, adding that the project on completion would promote education and research on modern lines in this field.

He issued the directive while chairing a meeting regarding the establishment of the University of Veterinary and Animal Sciences, Swat. Provincial Minister for Livestock MohibUllah Khan, Additional Chief Secretary Shahab Ali Shah, Secretary Livestock Muhammad Israr Khan and other concerned officials attended the meeting.

While briefing the meeting about various aspects of the university, it was told that the university would be established in ChotaKalam, spanning over 263 Kanals of land with an estimated cost of Rs 8 billion. The university will provide education and research facilities to students in 20 different departments of three faculties.

Briefing about the proposed departments in the university, it was informed that under the faculty of BioSciences, Anatomy, Physiology, Pharmacology, Fisheries, Wildlife, Biochemistry and Biotechnology departments would be established while Under the Faculty of Veterinary Science, Nine different departments, including Pathology, Microbiology, Medicine, Surgery and Pet Sciences would be established.

Similarly, under the Faculty of Animal Production and Technology, five departments would be established, including Animal Nutrition, Livestock Management, Poultry Sciences, Breeding and Genetics and the Department of Meat and Dairy Technology. It was further told that the relevant institutions of the Livestock and Dairy Development Department would also be linked to the proposed university as outreach centres. It was informed that the university building would include administration and academic blocks, continuing education centre, four boys' hostels, one girls' hostel, accommodation for faculty and staff, teaching and research centres and other allied facilities.

SKILL DEVELOPMENT PROGRAMME (SDP)

CVAS conducts session on Precision dairying and farm management

JHANG - To strengthen the knowledge base of undergraduate and postgraduate students and farmers, the College of person and talked about precision dairying with the DVM 2nd 4t Semester students. Prof. Drlahtasham Khan delivered a detection monitors, and daily body weight measurements, are already being utilised by dairy producers. Other theoretical Precision



Veterinary and Animal Sciences (CVAS), Jhang, recently organised the first session under the skill development programme (SDP) on Precision dairying and farm management. The session was organised as per the vision of Prof. DrNasim Ahmad (S.I.), Vice-Chancellor, the University of Veterinary and Animal Sciences, Lahore, and under the guidance of Prof. Dr Muhammad FiazQamar, Principal, CVAS, Jhang. Dr Muhammad Zahid Farooq, Lecturer, Department of Animal Sciences, was the resource

comprehensive lecture on soft and hard skills and communicated with the students. Precision Dairy Farming uses technologies to measure individual animals' physiological, behavioural, and production indicators to improve management strategies and farm performance. Many Precision Dairy Farming technologies, including daily milk yield recording, milk component monitoring, pedometers, automatic temperature recording devices, milk conductivity indicators, automatic estrus

Dairy Farming technologies have been proposed to measure jaw movements, ruminal pH, reticular contractions, heart rate, animal positioning and activity, vaginal mucus electrical resistance, feeding behaviour, lying behaviour, odour, glucose, acoustics, progesterone, individual milk components, colour (as an indicator of cleanliness), infrared udder surface temperatures, and respiration rates.

The main objectives of Precision Dairy Farming are maximising individual animal

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Ban on animal transportation to curb Lumpy Skin Disease

AVN Report

LAHORE - According to Punjab Livestock Secretary NaveedHaiderShirazi, bans on animal transportation and ring vaccination are important aspects of combating lumpy skin disease. He said this while presiding over a meeting regarding lumpy skin disease. The meeting also reviewed the lumpy skin disease control programme. The Secretary said that the disease emergency cell of the department was working round the clock. He added that more than 300,000 doses of vaccine had been provided to military and private dairy farms in Sindh, Balochistan and Punjab. A survey report related to lumpy skin disease in district RY Khan was also presented in the meeting. The departmental recommendations were formulated in the light of the report. In the wake of recommendations, the suggestion had been given to ban the transportation of animals from other provinces.

UVAS concludes 5-day ultrasonography workshop

AVN Report

LAHORE - The University of Veterinary and Animal Sciences (UVAS) recently concluded the 7th five-day training workshop on "Reproductive Ultrasonography in Five Species of Domestic Animals". Prof DrNasim Ahmad, Vice-Chancellor, UVAS, chaired the concluding session of the workshop and gave away certificates to the participants. Prof DrAmjadRiaz, Chairman, Department of Theriogenology, UVAS, and others, including 24 veterinarians, farm managers and vet practitioners/professionals from public and private organisations, were present. Speaking on occasion, Prof DrNasim Ahmad lauded and termed the hands-on training workshop as necessary for the uplift of the livestock sector and boosting the national economy of Pakistan. The objective of the workshop was to equip the participants with knowledge and skills to diagnose reproductive issues and improve fertility through ultrasonography in cows, buffalo, sheep, goats and dogs.

Medivac ND G7B Emulsion

Inactivated emulsion vaccine against Newcastle disease (ND) in poultry

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Pakistan emerges as major destination for Australian dairy exports

AUSTRALIA - According to a press release from Genetics Australia, Pakistan is emerging as a major export destination for Australian dairy cows and genetics. A new partnership between HRM Dairies in Pakistan and Genetics Australia has led to two shipments of semen in late 2021, with further shipments planned in the coming months.

The genetics exports follow a surge in shipments of live animals from Australia to Pakistan over the past five years. Genetics Australia's partnership with HRM Dairies was officially launched, and the corporate farm has become the first in Pakistan to use Australian genetics and genomic testing. Genetics Australia Export Manager Rob Derksen identified Pakistan as a country of interest for Australian genetics several years ago. "We were looking for a distributor in Pakistan and appointed two distributors, but both had little interest in genetic merit. They just wanted to focus on getting the cheapest possible product," Derksen said. "We decided at the time to place greater emphasis on exporting genetics to other countries, particularly China, as they were prepared to focus on better quality genetics and

promote the Australian Breeding Value system." "China became our number one export market, but in more recent years, as the relationship between Beijing and Canberra deteriorated, we could not obtain import permits for China and decided to again look at options in Pakistan," he continued. "We decided to appoint HRM as our exclusive distributor

demand in Pakistan, and the quality of dairy cattle in Pakistan wasn't up to the mark," Hassan said. He eventually secured Holstein cows from three different farms; Emu Banks, Eclipse, and Vala Holsteins, emphasising high-quality genetics. "We lead from the front and do a lot of trials and studies at our



because of their interest in breeding better quality animals, and their dairy will become a showcase in Pakistan for Australian genetics. Other farmers can't believe the high production of better quality Australian cattle." HRM Dairies CEO Mudassar Hassan moved to Australia in 2003 but wanted to retain a connection to his homeland. "I saw in 2017 that there was a huge gap between supply and

farm," Hassan said. "There were Holsteins in Pakistan but not to the genetic quality I was after." The barn-based farm is now milking nearly 400 cows and has introduced Jersey and Aussie Reds crosses. Hassan hopes to be milking 1,000 cows by 2024. Hassan predicts the industry could grow immensely. "If I talk in dairy language, Pakistan is just at the weaning stage," he said. While Pakistan is the fourth largest

dairy-producing country in the world, it still needs imported cattle and can struggle with what Hassan describes as "non-descriptive" stock. "Like Australia, Pakistan wants a stronger cow with good feet and legs, an open chest, dairy strength, good mammary systems, healthy and fertile, and coping with hot and humid conditions." HRM Dairies and Hassan's social media profile - where he produces videos of interviews with Australian farmers attracting up to 100,000 views - have helped educate Pakistani farmers about Australian genetics. "People thought Australia only imported genetics from the US or Europe to AI [artificially inseminate] their cows," he said. "We have changed that now and people realise Australia is independent of producing genetics. "This is the first time in Pakistani history that Australian genetics has come to Pakistan, and we can show them the bull's daughters performing in another country and those in our own herd," he added. "It's a showcase to farmers that it really works." Hassan said the shortage of quality cattle and genetics held back Pakistani dairy farming. "Cattle numbers aren't the

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KBP, JI emphasise on comprehensive agriculture policy

AVN Report
LAHORE - Jamaat-e-Islami (JI) leader Mian Muhammad Aslam and Kisan Board Pakistan's (KBP) Central President Chaudhary Shaukat Ali Chadhar recently said poor agriculture policies of the past government had left adverse effects on the farming community. Talking to media, they said that corruption, lawlessness, unemployment and price-hike were the gifts of the Pakistan Tehreek-e-Insaf (PTI) government. "Poor agricultural policies, increase in prices of agricultural inputs had left negative impact on the yield of wheat this year," they added. KBP Central President paid tribute to the JI to raise voice for farmers and other various issues. The KBP demanded that the government convene a meeting of all farmer organisations of the country to make a comprehensive agriculture policy to put agriculture on the right track.

Agri-Tech integration needed to overcome challenges: Chairman SECP

AVN Report
ISLAMABAD - Chairman Securities and Exchange Commission of Pakistan (SECP), Aamir Khan, said that Pakistan's agri-tech market has massive potential to flourish because of the regulators' receptive attitude toward fintech, high teledensity, internet penetration, and improvements in the electronic payments infrastructure. He made these remarks at the hybrid conference 'Agritech: Empowering the Rural Farmers' hosted by the Pakistan Fintech Network and Pakistan Microfinance Network. Khan noted that overcoming the challenges to the agriculture sector requires its merging with technology. Still, for that to happen, the domestic market players will have to embark on a journey toward agri-tech by understanding the small farmers' demands and supporting them to scale up their value chain. Pakistan's economy is profoundly dependent on the agricultural sector to generate employment, ensure food security, and support a healthy balance of payment. Some of the key issues in the sector are a lack of access

to formal credit, minimal use of technology, and the risks posed by climate change. Khan said Pakistan's large population and vulnerability to climate change necessitates innovative solutions to ensure the scalability, sustainability, and efficiency of the agri-value chain. The SECP has made numerous improvements in the regulatory ecosystem by simplifying the establishment of startups and improving access to finance. Still, it has also opened the door for startups to pitch their ideas for live testing in a controlled environment. Khan highlighted some of the recent initiatives the SECP has taken to expand the role of agriculture sector-related technology solutions and mentioned that it had simplified the requirements under the Non-Bank Financial Companies (NBFCs) regulatory framework to provide flexibility for fintech-based business models. This has also enabled the establishment of NBFCs-focused on agricultural credit.

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Methodology for identification and differentiation of Brucella species

by Dr. M. Talha Talib
(UVAS Lahore)

Methodology for Identification and Differentiation of Brucella Species

Brucella:
Brucellosis is an infectious disease caused by bacteria. People can get the disease when they are in contact with infected animals or animal products contaminated with the bacteria. Animals that are most commonly infected include sheep, cattle, goats, pigs, and dogs, among others. There are seven Brucella species of terrestrial origin, namely

- * Brucella abortus
- * Brucella melitensis
- * Brucella suis
- * Brucella canis
- * Brucella ovis
- * Brucella neotoma
- * Brucella microti

CHARACTERISTICS OF BRUCELLA
Brucella species are

- * Small Gram-negative
- * Facultative coccobacilli
- * Most lacking a capsule
- * Endospores
- * Native plasmids
- * They are intracellular within the host organism
- * Show environmental persistence outside the host

PATHOGENESIS & VIRULENCE:
IDENTIFICATION OF BRUCELLA
Other methods for the identification and speciation of brucella include

- * Production of urease and H₂S
- * Sensitivity to dyes, basic fuchsin, thionine and thionine blue
- * Use of specific antisera

Laboratory Diagnosis
Laboratory methods for diagnosis include

- * Culture
- * Serology
- * Hypersensitivity test

- * Molecular testing

Specimens; blood, urine, sputum, milk, and lymph node biopsy

DIRECT DETECTION

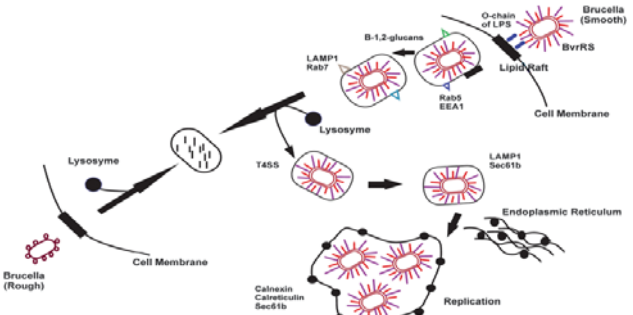
- * Conventional PCR
- * Real time PCR

Both these directly detect the brucella from clinical specimens Gram staining is not useful for its demonstration

CULTURE AND ISOLATION Methods

1. Castaneda's method
2. Automated methods such as Bactec
3. Lysis centrifugation system

- * Blood culture is the most definitive method for the diagnosis of brucellosis
- * 5ml of blood is inoculated into a bottle of 50ml trypticase soy broth and incubate at 37°C under 5-10% CO₂
- * Subcultures are made on solid media every 3-5 days beginning on the fourth day ,



subcultures are made on solid media, every 3-5 days for 8 weeks before declaring the culture as negative

- * Bactec cultures may become positive in 5-6 days

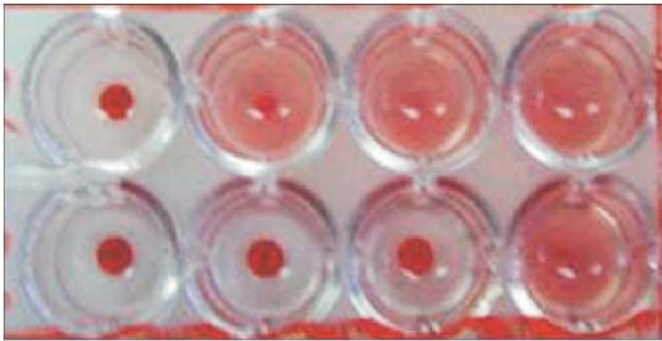
CASTANEDA METHOD
In general, blood culture for Brucella is performed by conventional Castaneda method where the blood specimen is directly inoculated in the liquid phase of the Castaneda medium. Although the results by this method are satisfactory in acute untreated cases, the incubation time required is very long. In Castaneda medium, liquid blood culture broth and solid nutrient agar is incorporated in blood culture bottle in the form of diphasic medium

SEROLOGICAL TESTS
Mostly based on antibody detection These includes

1. Serum agglutination
2. ELISA
3. Rose Bengal test
4. Complement fixation
5. Indirect combs

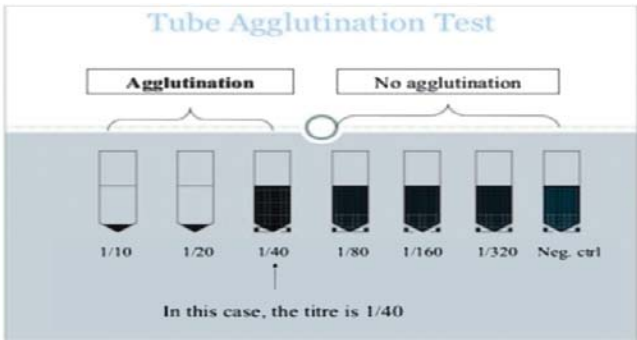
6. Immunecapture agglutination

SERUM AGGLUTINATION TEST
The serum (tube) agglutination test (SAT) detects antibodies to the S-LPS. Antibodies reacting against S-LPS can also be detected by other tests, such as ELISA (enzyme-



linked immunosorbent assay) and the Coombs test. It is important to note that the Coombs test remains positive longer than other agglutination tests.

- * It is generally agreed that a titer of >1:16 in the presence of a compatible illness



supports the diagnosis of brucellosis

- * Demonstration of a fourfold or greater increase or decrease in agglutinating antibodies over 4 to 12 weeks provides even stronger evidence for the diagnosis

ELISA

- * Probably the second most common serological test
- * The sensitivity of ELISA was 100% when compared with blood culture but only 44% when compared with serological tests other than ELISA
- * The specificity was >99%

ROSE BENGAL TEST
The Rose Bengal test (RBT) is a rapid slide-type agglutination assay performed with a stained B. abortus suspension at pH 3.6-3.7 and plain serum. Because of its simplicity, it is often used as a screening test in human

brucellosis and would be optimal for small laboratories with limited means.

PROCEDURE

- * Place 1 drop (50 µL) of the serum under test into one of the circles on the card.
- * Dispense 1 drop of positive control serum and 1 drop of negative control serum into

two additional circles.

- * Add 1 drop of Rose Bengal Antigen to each circle next to the sample to be tested.

COMPLEMENT FIXATION TEST
The process of binding serum complement to the product formed by the union of an

reaction to brucella reagent

- * In this test a protein extract of the bacteria is used as an antigen and is administered intradermally
- * The presence of erythema and induration of 6mm or more within 24 hours is suggestive of positive reaction
- * This test is positive only in chronic brucellosis but negative in acute brucellosis

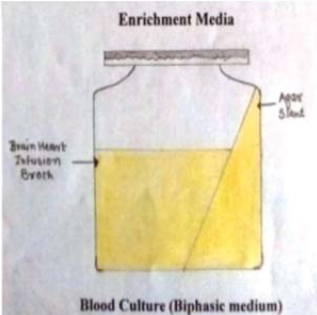
Repeated negative skin test excludes brucellosis.

MOLECULAR TESTING
This includes

- * PCR
- * Imaging

PCR an emerging tool

- * Polymerase chain reaction shows promise for rapid diagnosis of brucella spp. In human blood specimens
- * Positive PCR at the



completion of treatment in not predictive of subsequent of relapse

- * PCR testing for fluid and tissue samples other than blood has also been described

IMAGING

- * Patients with spine symptoms MRI examination to rule out spinal cord compromise

DIFFERENTIATION OF BRUCELLA SPECIES
Several molecular methods are used for Brucella spp. including

- * PCR restriction fragment length polymorphism (RFLP)
- * Repetitive element palindromic PCR (REP-PCR)
- * Enterobacterial repetitive intergenic consensus PCR (ERIC-PCR)
- * Random amplified polymorphic DNA PCR (RAPD-PCR)
- * Amplified fragment length polymorphism (AFLP)
- * Arbitrarily primed PCR (AP-PCR)
- * Single-nucleotide polymorphism (SNP)

Continued on Page 13

Emerging Zoonotic diseases & concept of one health

By Dr Muhammad Shoaib
DVM (UVAS Lahore)

Emerging infectious diseases are infections that have recently appeared within a population or those whose incidence or geographic range is rapidly increasing or threatens to increase in the near future. Emerging infections can be caused by: Previously undetected or unknown infectious agents.

What are Zoonotic diseases?

An infection or infectious disease transmissible under natural conditions from vertebrate animals to human and vice versa.

What is Zoonosis?

Zoonosis is another name for a zoonotic disease. This type of disease passes from an animal or insect to a human. Some don't make the animal sick but will sicken a human. Zoonotic diseases range from minor short-term illness to a major life-changing illness. Certain ones can even cause death.

Types

The types of zoonosis include those caused by:

- a Virus
- Bacteria
- Fungus
- Parasites

Zoonotic diseases spread by mosquitos and ticks are some of the most serious of these diseases.

Always assume every animal is shedding pathogens.

Viral Zoonotic Diseases:

First of all, we will discuss some viral Zoonotic diseases

1-Rabies

Primarily Zoonotic disease of warm blooded animals particularly carnivores. For example Dogs, cats, foxes, tigers, jackals and wolves etc Rabies can be characterized as a disease in which there is Classical hydrophobia, a short period of illness due to encephalitis ending in death, only

communicable which is always fatal despite the intensive care. This disease has long and highly variable incubation period of 6-60 days. The main agent of this disease is "Lyssa Virus type 1" Family "Rhabdo viridae"

The source of this is Saliva of Rabid animals. The mode of transmission of this disease are following:

- 1- Animal Bites
- 2- Lick over abraded/un-abraded skin.
- 3- Aerosoles (Respiratory)
- 4- Person to person which is rare but on the record.

Symptoms:

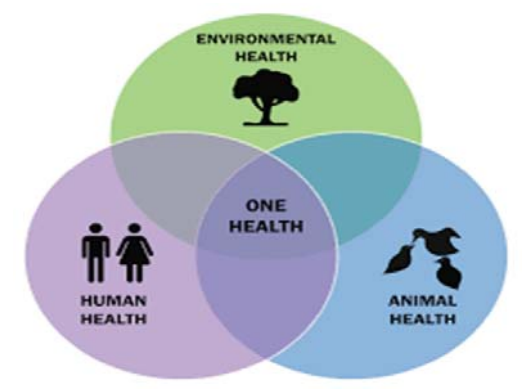
Treatment of this disease is to inject the prophylactic Anti-Rabies. Local treatment is very necessary (vigorous cleaning of wound with soap, detergent, ether, alcohol. But avoid wound suturing. Anti tatenus serum should inject and also inject the analgesics and antibiotics symptomatically.

2-Monkeypox

This condition can be described as the respiratory infectious in which there is restlessness and massive patchy hair loss with scabs in the carriare and Fever and pox like rash (in people) 1-2 weeks after handling rodents.

Carriares are Rats, prairie dogs and rabbits. Especially when imported from Africa. The transmission of this disease is from direct contact with carriares.

Treatment Supportive treatment is best.



Prevention is Avoid contact with rodents from Africa Rodents imported from Africa were banned after a 2003 outbreak Smallpox vaccine affords some protection 3-Avian flu Bird flu, or avian flu, is an infectious type of influenza that spreads among birds. In rare cases, it can affect humans. There are lots of different strains of bird flu virus. Most of them don't infect humans.

Although bird flu may kill more than half the people it infects, the number of fatalities is still

low because so few people have had bird flu. Fewer than 500 bird flu deaths have been reported to the World Health Organization since 1997.

What Are the Types of Bird Flu?

The bird flu virus, avian influenza A, is divided into two main categories:

Highly pathogenic avian influenza (HPAI) causes more serious illness in chickens and is more likely to kill them.

Low pathogenicity avian influenza (LPAI) causes less serious illness in chickens and is less likely to cause death.

How Do Humans Get Bird Flu?

People catch bird flu by close contact with birds or bird droppings.

In the 2014 outbreak, some people caught H5N1 from cleaning or plucking infected birds. There were reports in China of infection via inhalation of aerosolized materials in live bird markets. It's also possible that some people were infected after swimming or bathing in water contaminated with the droppings of infected birds. And some infections have occurred in people who handle fighting cocks.

Is There a Treatment for Bird Flu?

The flu drugs oseltamivir (Tamiflu), peramivir (Rapivab), or zanamivir (Relenza) may help treat bird flu in people, although more studies are needed. These drugs must be given soon after symptoms appear.

4- HantaVirus

Orthohantavirus is a genus of single-stranded, enveloped, negative-sense RNA viruses in the family Hantaviridae within the order Bunyavirales. Members of this genus may be called orthohantaviruses or simply hantaviruses. Orthohantaviruses typically cause chronic asymptomatic infection in rodents.

Hantavirus spread when virus-

containing particles from rodent urine, droppings, or saliva are stirred into the air. It is important to avoid actions that raise dust, such as sweeping or vacuuming. Infection occurs when you breathe in virus particles.'

Symptoms:

Early symptoms are general and include fever, fatigue, and muscle pain. Other symptoms may include headache, nausea (a feeling of sickness in the stomach), vomiting, diarrhea (loose stool/poop) and dizziness.

Treating HPS

There is no specific treatment, cure, or vaccine for hantavirus infection. However, we do know that if infected individuals are recognized early and receive medical care in an intensive care unit, they may do better. In intensive care, patients are intubated and given oxygen therapy to help them through the period of severe respiratory distress.

The earlier the patient is brought in to intensive care, the better. If a patient is experiencing full distress, it is less likely the treatment will be effective.

Therefore, if you have been around rodents and have symptoms of fever, deep muscle aches, and severe shortness of breath, see your doctor immediately. Be sure to tell your doctor that you have been around rodents- this will alert your physician to look closely for any rodent-carried disease, such as HPS.

Continued on Page 10

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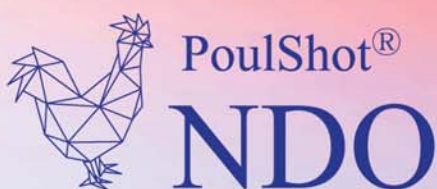
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Emerging Zoonotic Diseases...

Continued from Page 07

1- Cat Scratch Fever:-

Cat-scratch fever is an infection caused by a kind of bacteria called Bartonella henselae (it's also sometimes called Bartonella henselae infection). You can get it if a cat that has this type of bacteria licks an open wound on your skin or bites or scratches you.

Carriers - Cats infected by a flea bite

Transmission Not transmitted directly from cat to cat Transmitted from cat to person by bite or scratch Symptoms (cat) Many are asymptomatic carriers May have fever and lethargy, enlarged lymph nodes for a period of time.

Symptoms (People) Relapsing fever Enlarged lymph nodes, with red lines on the skin inflamed lymph vessels Called "bacillary angiomatosis" Liver and spleen infections ("peliosis") Infected heart valves (endocarditis) Mostly in immunocompromised people and children.

Treatment - antibiotics Prognosis - good if treated Prevention Control fleas and ticks Treat cats with antibiotics Cats owned by immunocompromised people should be tested for Bartonella

2- Lyme Disease

Lyme disease is the most common vector-borne disease in the United States. Lyme disease is caused by the bacterium Borrelia burgdorferi and rarely, Borrelia mayonii. It is transmitted to humans through the bite of infected blacklegged ticks.

Affects dogs and humans (not cats) Prevalent only in certain areas - check with your vet Transmission deer ticks - Ixodes spp. must be attached for at least 24 hours, to cause infection.

Symptoms Early Skin rash at the tick bite Fever, muscle aches, enlarged lymph nodes Late Neurologic, Kidney, Heart disease arthritis.

Treatment - antibiotics Prognosis Difficult to cure dogs People treatable if treated early Difficult to cure chronic infections in people Prevention control ticks Non-core vaccine available for dogs.

3- Undulant Fever

Undulant fever: An infectious disease due to the bacteria Brucella that characteristically causes rising and falling fevers, sweats, malaise, weakness, anorexia, headache, myalgia (muscle pain) and back pain. The disease is called undulant fever because the fever is typically undulant, rising and falling like a wave.

Carriers dogs (can be asymptomatic), cattle, pigs Transmission contact with urine, discharge of estrus (heat), afterbirth, aborted fetuses.

Symptoms (dogs) Inflamed testicles, Scrotal dermatitis Enlarged lymph nodes or spleen Weight loss, poor hair coat Abortion, neonatal death, sick puppies Eye infections Infections in the disks in the back.

Symptoms (people) Fever, chills, muscle aches Weight loss Enlarged lymph nodes or spleen Treatment Antibiotics.

Prevention Wear gloves, wash hands when handling female dogs in heat, aborted puppies or urine 4- Salmonella Spp.

Salmonellosis is one of the most common foodborne infections. Infections caused by Salmonella should be divided into minor and major disease. Minor salmonellosis caused by nontyphoid Salmonella strains is characterized by self-limiting diarrhea, rarely leading to bacteremia or meningitis. Major salmonellosis is represented by typhoid fever. The clinical picture of typhoid fever includes fever, headache, malaise and sometimes cough.

Salmonella was first discovered by an American bacteriologist, D. E. Salmon, in 1884. The organism was isolated from porcine intestine. Up to 80% of salmonellosis cases are not recognized as part of a known outbreak and are considered sporadic cases. Moreover some are not diagnosed at all.

Transmission:-

The main reservoir of Salmonella is the intestine of humans and animals, but the organism has also been identified in reptiles and insects. There is a wide range of sources of Salmonella infection, eggs, meat, dairy products, vegetables and water are the most important. In developed countries the most common source of infection is food. The identification of food source causing disease is sometimes difficult, but it is the most important measure to prevent the spread of the infection. A recent study published in PLoS One draws attention to the growing number of cases of Salmonella infection in Australia. They observed a sustained increase of the cases between 2000-2013, involving both Salmonella Typhimurium and Salmonella non-Typhimurium. They estimate that in Australia in over 70% of cases the source was food. Water could represent a source of contamination. 13 Pires et al. analyzed several outbreaks and observed that eggs and meat (chicken, pork) remain the most important sources, but vegetables and fruits should not be neglected. Chicken and other birds can carry the microorganism and exposure to these birds has been associated with the acquisition of the infection. Cases of infection have also been reported after contact with pets. Often, the animal is asymptomatic. Person to person transmission is possible.

Treatment:-

5- Tetanus

Tetanus is an infection caused by bacteria called Clostridium tetani. When the bacteria invade the body, they produce a poison (toxin) that causes painful muscle contractions. Another name for tetanus is "lockjaw". It often causes a person's neck and jaw muscles to lock, making it hard to open the mouth or swallow.

Carriers - animal mouths and anything not sterile that can cause a deep puncture wound Transmission - puncture by tooth or object Symptoms (people & animals) Horses & sheep > goats, dogs, cats, cattle, etc. Fever and muscle soreness, progressing to uncontrolled muscle contraction "sardonic risus" - grimacing of facial muscles.

Treatment - antibiotics Prognosis Excellent if treated early Can be fatal if untreated Prevention Every shelter worker should be current on tetanus vaccination Once every 7-10 years.

6- Leptospirosis

Leptospirosis is a bacterial disease that affects humans and animals. It is caused by bacteria

of the genus Leptospira. In humans, it can cause a wide range of symptoms, some of which may be mistaken for other diseases. Some infected persons, however, may have no symptoms at all.

Carriers warm blooded wildlife, rodents, livestock, dogs Cats do not get this disease Transmission Shed in the urine, which contaminates standing water (including lakes used for water sports) Dogs can shed for up to a year after infection Animal caretakers can be exposed by contacting infected dog urine. Symptoms Chronic urinary tract infection Kidney failure Liver failure (jaundice) Fever. Treatment Treat liver and/or kidney failure Penicillins to treat disease Tetracycline to eliminate the carrier state Prognosis - 85% do well if treated Prevention Dog vaccine for 4 of serovars Immunity lasts about a year Handle dog urine with gloves, wash hands Protect mouth and eyes when hosing kennels.

7- Leprosy and Tuberculosis

Leprosy is an infectious disease that involves the skin and peripheral nerves. Both TB and leprosy are granulomatous infections caused by the intracellular

Gram-positive aerobic acid-fast bacilli (AFB) Mycobacterium tuberculosis and Mycobacterium leprae, respectively.

Tuberculosis (TB) is a potentially serious infectious disease that mainly affects the lungs. The bacteria that cause tuberculosis are spread from person to person through tiny droplets released into the air via coughs and sneezes.

A new DNA study of two dozen skeletons reveals that leprosy victims frequently had TB too. Because TB is more easily transmitted and kills faster than leprosy, victims were more likely to pass on TB before their death. Carriers - any warm blooded animal Transmission Direct contact with secretions from wounds Respiratory aerosols Symptoms (carrier & people) Respiratory infection Draining wounds.

Treatment - long term antibiotics Prognosis - variable.

Fungal Zoonotic Diseases:

Ringworm:

Ringworm is a common skin infection that is caused by a fungus. It's called "ringworm" because it can cause a circular rash (shaped like a ring) that is usually red and itchy. Anyone can get ringworm.

Some cats are carriers with no symptoms Especially long hair cats (Persians) Diagnosis:

Sometimes can see fungal hyphae on infected hairs under the microscope fungal culture of hairs at the edge of the round hairless lesion DTM media turns red, and RSM turns blue-green MUST examine culture growth to tell ringworm from another fungal contaminant Ultraviolet light - infected hairs glow green (50%)

Treatment:

Mild cases resolve on their own or with topical treatment (Tresaderm, Lotrimin, Lymdyp) Severe cases need oral antifungals for weeks to months (griseofulvin, itraconazole, fluconazole, terbinafine) ITRACONAZOLE SUSPENSIONS MAY NOT BE EFFECTIVE (may not be absorbed) Severe cases can be disastrous for herd health Program (lufenuron) was thought to help years ago, but studies have shown that it does not People vary greatly in their susceptibility to ringworm.

Mammary Neoplasia in small animals

**Abdul Mateen,
M. Ilyas Naveed**
(UVAS Jhang)

A mammary neoplasia is an uncontrolled abnormal cell growth (tumor) of the mammary tissue and are commonly seen in intact female dogs and the dogs spayed after their first heat cycle. Mammary tumors occur more frequently seen in toy breeds such as miniature poodles, spaniels and large breeds like German shepherds. Male dogs are rarely affected. More than a quarter of un-spayed female dogs may develop a tumor in their mammary during their lifespan. The risk is much lower for female dogs who are spayed, male dogs and cats of either gender. In female dogs, 50% of mammary gland tumors are malignant and 50% are benign. However, some of the malignant mammary tumors are considered fatal. In contrast, over 85% of mammary gland tumors in cats are malignant and many of them have an aggressive biologic behavior. The risk of the dog to develop a mammary tumor is 0.5% if spayed before first heat (approximately at the age of 6 months), 8% after their first heat, and increases up to 26% if spayed after their second heat. Cats spayed before 6 months of age have 7 times less risk of developing mammary tumors and spaying at any age decreases the risk of mammary tumors by 40% to 60% in cats.

Sign and Symptoms:

- * A significant palpable mass underneath the skin of abdomen is the most common sign in dogs and cats having mammary gland tumors.
- * Other signs and symptoms include mammary gland discharge, skin ulceration over the gland, sore breasts, swelling, loss of appetite, weight loss, and generalized debilitation and weakness.

Diagnosis:

A regular and good general physical exam is necessary to determine the development location, size and access the character of the entire mammary glands and the enlargement of regional lymph nodes. Other procedures are performed to diagnose and stage the cancer (determine what type it is and where it is located in the body) are:

- * Blood work: blood count, chemistry, urinalysis, and clotting profile
- * Diagnostic Imaging: Abdominal ultrasonography, x-rays of the chest and sometimes CT scans are used to check for tumors/cancers that have spread to other parts of the body (metastasis).
- * Fine Needle Aspiration: for this purpose a smaller bore needle is used to take sample of the mammary mass to get help in differentiating it from other skin tumors.
- * Lymph nodes can also be examined to determine the spread of cancer cells. This is more reliable for dogs than cats for confirmation of diagnosis.
- * Biopsy sample may be indicated to rule out a certain kind of tumor called inflammatory mammary carcinoma, as surgery is generally not recommended for this tumor type.

Treatment:

- * The type of surgery depends on the size, location, and number of mammary tumors and species of your pet. In general, surgery is more dominant in dogs with mammary tumors which involves the removal of either the mass alone (Lumpectomy i.e. excision of mass in close proximity but quite clear of mammary tissue or Partial Mastectomy) or the removal of excision of entire gland containing the tumor (Simple Mastectomy).



However, in cats, more large and aggressive surgery is recommended with removal of one mammary gland (Unilateral mastectomy) or preferably both sets of mammary glands

(Bilateral mastectomy)

- * Bilateral mastectomy in a cat is often done in two surgical procedures that is 2-3 weeks apart.
- * The local lymph node should also be removed in cats, if possible, to avoid for evidence of spread of the cancer keeping in view the lymphatically associated affected glands (Regional mastectomy)
- * There is controversy in the role of spaying female dogs along with mammary tumor. Most of the studies have shown no benefit of spaying along with removal of tumor simultaneously in prevention of new mammary tumors development rather influence the aggressiveness or metastatic potential of already existing mammary gland tumors. However, spaying at the time of mammary tumor resection can be recommended by the veterinary surgeon as the recent studies have shown a beneficial effect in dogs with mammary tumors and can prevent unrelated diseases, such as pyometra (uterine infection).
- * The role of chemotherapy in cats and dogs having malignant mammary tumors has not been clearly defined for all tumor types but oncologist consultation after surgery is often recommended.
- * Hormonal therapy, immunotherapy and radiation therapy for most of the

mammary gland tumors in cats and dogs is not beneficial or even have not been investigated.

- * Surgery is not recommended in the dogs with inflammatory mammary carcinoma because it does not improve survival rate. Unfortunately, an effective treatment has not been is not yet available.
- * Radiation therapy when combined with NSAIDs have shown to provide the most effective pain management and relief in dogs, but the prognosis remains very poor.

Surgical Technique:

- For caudal mastectomy, make an elliptical skin incision around the glands to be excised
- Then incise subcutaneous tissue to expose the abdominal fascia
- Elevate the cranial edge of the segment and separate subcutaneous tissue from the fascia sliding sharp scissors along the abdominal fascia.
- Ligate and divide the caudal superficial epigastric vessels near the inguinal ring.
- Advance the skin edges to the center of the defect with walking sutures and sub-cuticle sutures, appose skin edges with appositional sutures.

Post-operative Care:

- Post-operative analgesia is given
- Kept on fluid therapy for few days
- Parenteral Antibiotics are given
- Abdominal bandages are applied for 2-3 days, bandages and sutures removed after 5-7 days of surgery
- Inspection of wound for inflammation, swelling, drainage, seroma, dehiscence, and necrosis
- Complications may include pain, inflammation, hemorrhage, seroma formation, infection, Ischemic necrosis, self-trauma, dehiscence, hind limb edema, and tumor recurrence.
- Prognosis may be good if good POC is performed, otherwise complications may develop.

Continued from front page
Pakistan's seed sector...

Though the amended Seed Act is an example of obedience to wealthy trans-national corporations, it is in compliance with the TRIPs. Under TRIPs, the private sector taking control over the livelihood of small farmers is one of the most anti-farmer acts in Pakistan, he said. "This terrible step has worsened food insecurity in Pakistan, mainly in Sindh province". Jawad mentioned that most seed companies were engaged in just marketing certified seeds produced by leading manufacturers. "This is why we do not see new seed varieties more often, and technological advancement in the preservation of seeds is not progressing well in the country," he said. "One must

understand that economic stabilisation in Pakistan will not be sustainable unless a wider political dialogue supports it." Speaking to the local newspaper, Miran Mohammed Shah, President Sindh Chamber of Agriculture, lamented there were no agro-based projects under CPEC. "The agriculture sector was completely ignored at the time of initiation of CPEC," he said. "If further development occurs under CPEC, many projects can be taken up, including seed development." Similarly, water management, climate change analysis and mechanical implements could be other areas to focus on under CPEC. Sindh Abadgar Board (SAB) Vice President Mahmood Nawaz Shah said

that the power and infrastructure were the prime focus of CPEC. He said that there are few interventions under CPEC that might help the agriculture sector going forward.

Continued from Page 02
CVAS conducts session...

potential, early detection of disease, and minimising the use of medication through preventive health measures. Perceived benefits of Precision Dairy Farming technologies include increased efficiency, reduced costs, improved product quality, minimised adverse environmental impacts, and improved animal health and well-being. Real-time data used for monitoring animals may be incorporated into decision support systems designed to

facilitate decision making for issues that require the compilation of multiple data sources. Technologies for physiological monitoring of dairy cows have great potential to supplement the observational activities of skilled herds persons, which is especially critical as fewer skilled workers manage more cows. Moreover, data provided by these technologies may be incorporated into genetic evaluations for non-production traits to improve animal health, well-being, and longevity. The economic implications of technology adoption must be explored further to increase adoption rates of Precision Dairy Farming technologies. Precision Dairy Farming may be the next important technological breakthrough for the dairy industry. -PR

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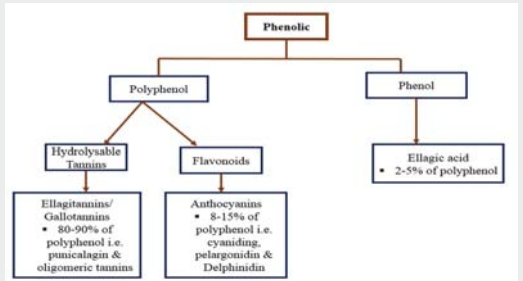
Protective role of Pomegranate (Punica granatum) peel extract in broiler birds exposed to Mycotoxicosis

Dr. Maria Jamil, Dr. Aisha Khatoon,
Dr. Muhammad Kashif Saleemi
(University of Agriculture, Faisalabad)

Phytochemical are the biologically active components in plants which are responsible for giving flavors, color natural disease resistance. Classes of phytochemicals are flavonoids, tannins, alkaloids, quinones, saponins, phenolic compounds, terpenoids, coumarins and polyphenols. Natural antioxidant resultant from plants have several immunostimulant impacts due to the polyphenols. Natural antioxidant components may also increase the activities and synthesis of antioxidant enzyme and polyunsaturated fatty acids in animal's tissue. Pomegranate (Punica granatum) is an imperative ornamental plant that belongs to the family Punicaceae and grown in several parts of the world. Pomegranate peel is the inedible part of the fruit that contributes upto 50% of whole fruit weight. Pomegranate peel has antifungal, antioxidant, antimicrobial, hypolipidemic, hypoglycemic, hepatoprotective, non-cytotoxic and anti-inflammatory characteristics. Pomegranate peel also improve the oxidative constancy of meat due to its high antioxidant content. These improvement is due to its capability to efficiently scavenge the active form of reactive oxygen species that are primarily involved in the initiation and advanced stages of oxidation. The scavenging capability of pomegranate peel extract is recognized due to its several components i.e. hydrolysable tannins in which includes gallotannins, ellagitannins and gallagyl esters such as pedunculagin, punocaliin and punicalagin. There are also the significant amount of ellagic acid, flavonoids, catechins, flavones, flavonones, anthocyanidins and various polyphenols exist in the pomegranate peel. Following steps that are mainly involved



in the extraction of medicinal plants i.e. pomegranate peel extracts are, Extraction ' Filtration ' Concentration ' Storage pathogens leads to



significant losses in the production and quality of crops universally. Moreover, under the favorable environmental circumstances, several fungus i.e. Aspergillus and Fusarium species are capable to form the mycotoxins, that accumulate in the animal and human tissues and leads to severe threat to the consumer. It has been recognized that pomegranate peel extract treatment decreased aflatoxin formation by A. flavus upto 97%. Numerous fungal plant pathogens which belongs to the genera Fusarium and Aspergillus form the significant mycotoxins of concern relative to humans and animals health. Such fungal species signify the mycotoxicological and phytopathological threat at the pre-harvest and post-harvest phases, and in processed food products. Mycotoxins that are secondary metabolites formed by such fungus, have a marked economic effect universally as they pose a marked risk to feed and food safety, and in medical setting. Certainly, among the natural

feed and food adulterants, mycotoxins signify the one of the major concerns of chronic toxicity, and pose serious challenges in food toxicology. While considerable improvement has been made toward the development of altered agent to prevent the mycotoxigenic pathogens during the pre and post harvesting phases, numerous effective antifungal drugs which may be utilized in food formation setting remain limited. Such as azole based fungicides are frequently used as antifungal in agriculture due to their high efficacy and broad spectrum action. The arise of drug resistance in several fungal contaminants along with increase public concern over the environment and health effects of fungicides has led to marked concern in the rise of alternates, i.e. environmental friendly approaches of infection control. Plant extract are usually reflected as environmental friendly such as decomposable with less toxic to the environment, therefore better alternate to the synthetic drugs. Plants produce a varied variety of secondary metabolites that serve them as protective components for their own defense against other plants, microbes and pests. Numerous plant extracts were recognized to show a direct antifungal actions in treated plant hosts. Such secondary metabolites show a varied variety of biological and pharmacological characteristics, leading to the usage of various products isolated from plants in the cure of microbial diseases in several host-pathogen combinations. Pomegranate by products i.e. peels and seeds are considered as a high source bioactive components i.e. flavonoids, tannins and phenolic acids that have free radical scavenging action and antioxidant ability. Numerous studies have been reported on the efficacy of pomegranate peel extracts against plant and human fungal pathogens.

Continued from Page 04 Pakistan emerges...

problem; it's the shortage of quality genetics, and the main challenge is education," he said. "At the moment, farmers are increasing their herds without knowing the strengths and weaknesses because of the lack of genomic testing." HRM is the only farm in Pakistan doing genomic testing, and Hassan hopes to help farmers understand the value of good genetics in improving fertility, health and profitability. "Profit is not all about milk production; profit also means less expenses," he said. "If your cow is doing 12,000 litres but having mastitis twice and taking four doses to get pregnant, you won't be making that much profit, but if she's producing 8-9000 litres and getting pregnant easily and not having health problems, she's probably more profitable." Last year, almost 97% of the HRM herd got pregnant; it had very low mortality rates and high production. Minimum

production from any cow was 10,000 litres, but the average was more than 12,000 litres, which Hassan attributes to genetics, management and nutritional control. Hassan is a firm believer that Australian cows and genetics work in Pakistan. "It's a huge market, but in Australia it is very underrated; Australia could do way more to capitalise on the potential," he said. Derksen said there was also an excellent opportunity for Australian farmers to sell better quality surplus heifers to Pakistan. "Pakistani farmers are now recognising their first-cross animals with poor breeding are not performing anywhere near the level of the Australian cows," he said. "HRM has demonstrated there is real merit in better quality genetics." - PR

Continued from Page 06 Methodology for identification... REPETITIVE ELEMNRNT PALINDROMIC PCR * REP-PCR is based on repetitive

extragenic palindromic sequences in bacterial genomics and primers designed for that sequence. * Its properties include an extragenic location and highly conserved repetitive reverse sequences. A large number of copies of this sequence are located in complex clusters and have a good repeatability. * This technique is simple and desirable, determining the sequence of the genome is not essential, and DNA can be used instead of a bacterial suspension. * In addition, it does not use living microorganisms and reduces the risk of bacterial transmission to laboratory personnel. **PCR RESTRICTION FRAGMENT LENGTH POLYMORPHISM** * The PCR-RFLP method consists of analyzing a PCR-based multiplication loci. * In this method, outer membrane protein (OMP) as an appropriate marker was is for the differentiation of B. abortus and B. melitensis. The outer membrane proteins are made by the OMP2a and

OMP2b genes, which are homogeneous and have minor variations. * After PCR, the product is subjected to appropriate restriction enzymes, and ultimately, on the basis of the limited number of components from the digestive enzyme, the results are analyzed by gel electrophoresis. * Some studies have reported that all Brucella spp. can be differentiated by PCR-RFLP on the basis of the OMP2a, OMP2b, OMP25 and OMP31 genes. **ENTEROBACTERIAL REPETITIVE INTERGENIC CONSENSUS PCR (ERIC-PCR)** * It is used for detecting and identifying different strains of E. coli. * Enterobacterial Repetitive Intergenic Consensus Polymerase Chain Reaction (ERIC-PCR) technique is a quick, sharp and cost effective fingerprint method. * The DNA profiles were clearly detectable via specific fingerprint patterns. The ERIC-PCR seemed to be a good approach for molecular typing of E. coli strains isolated from different animal.



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OTI holds Ramadan dinner event

KARACHI - Orient Trader International (OTI) recently held a Ramadan iftar dinner event in Karachi. In the previous year, the company

couldn't hold this annual dinner due to the pandemic that was at its peak.

Along with the increasingly controlled pandemic and the

relaxing curbs by the government, iftar was finally held in person and was the first company gathering event in 2022.

Ramadan iftar dinner is one of the

company's annual events held to strengthen the togetherness of employees. The company hopes to hold another gathering event in the future. **-PR**



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نصوصیات

لنکاسپر ایڈ-ڈی پاؤڈر وسیع الاثر ایمنی بانیو کلس کا مرکب ہے جو ای کو لائی، مونیو، مانیو، مانیو، سی آر ڈی، گردوں کی سوش، جوڑوں کے درد اور نظام تحنص کے جراثیموں کے خلاف نہایت موثر ہے۔



پھلوں اور سبزیوں کے صنعتی ضمنی اجزاء کے لائیو سٹاک فیڈ میں استعمال

قمر (پرنسپل: CVAS) نے ورکشاپ کے منعقد کروانے پر وائس چانسلر (UVAS) پروفیسر ڈاکٹر نسیم احمد کا شکریہ ادا کیا۔ مزید برآں انہوں نے آرگنائزرز کے کردار کو سراہا۔ آخر میں معزز مہمانان گرامی اور مقررین میں تحائف اور سرٹیفکیٹس تقسیم کیے گئے۔ تمام مقررین اور ناظرین نے اداہ بند میں اس ورکشاپ کے انعقاد کو خراج تحسین پیش کیا۔



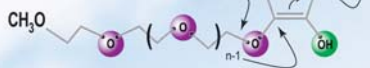
لائو سٹاک میں پیداواری لاگت کا 70 سے 80 فیصد حصہ جانوروں کی خوراک کا ہوتا ہے، اس لیے جانوروں میں منجگہ غذائی اجزاء کی جگہ پھلوں اور سبزیوں کے صنعتی ضمنی اجزاء کے استعمال پر CVAS جھنگ میں انٹرنیشنل ورکشاپ کا انعقاد کیا گیا ہے۔ یہ ورکشاپ یونیورسٹی آف ویٹرنری میڈیسن ویانا (VetMedUni) اور یونیورسٹی آف

ویٹرنری اینڈ اینیمل سائنسز لاہور (UVAS) کے ایک مشترکہ پراجیکٹ کا حصہ تھی۔ ورکشاپ کا مقصد پھلوں اور سبزیوں کے صنعتی ضمنی اجزاء کا جانوروں کی خوراک میں استعمال سے متعلق سبھی Stakeholders کو آگاہی فراہم کرنا تھا۔ ورکشاپ کے آغاز میں چیف آرگنائزر ڈاکٹر مبارک محمود نے پراجیکٹ کا تعارف کروایا۔

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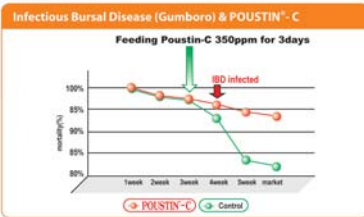
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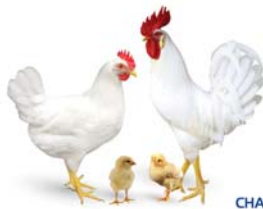


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POUSTIN®-C as an immune stimulator:			
Neutrophils:	↑ Activity	↑ Production	
Viral Immunity:	↑ Interferon production and subsequent immune response to viral infection.		
Lymphocytes:	↑ Cell Production	↓ Cell damage	↑ Antibodies production
Inflammatory Response:	↓ Histamine production	↓ Inflammatory damage	
Survivability during viral infection:	↓ Mortality considerably by feeding		



Conclusion
Mortality was decreased 78% by feeding **POUSTIN®-C** in a trial conducted on July 27-August 31, 2001



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Dr. گیٹ سپیکر VetMedUni Ratchanaeewakhiosa-ard اور Dr. Thomas Hartinger شامل ہوئے۔ دیگر مقررین میں ڈاکٹر ظفر اللہ خان (ڈائریکٹر ریسرچ اینڈ ڈیولپمنٹ، ARASS)، ڈاکٹر محمد شریف (یونیورسٹی آف ایگریکلچر، فیصل آباد)، عثمان خان صاحب (مارکیٹ نیچر المیجر انڈسٹریز) شامل تھے۔ سبھی نیشنل اور انٹرنیشنل سپیکرز نے اپنے لیکچرز میں پھلوں اور سبزیوں کے صنعتی ضمنی اجزاء کی پیداوار، ان کی preservation، افادیت، غذائی اہمیت اور ریسرچ کے بارے میں اہم معلومات فراہم کیں۔ ورکشاپ اس لحاظ سے ابھی اہمیت کی حامل تھی کہ اس میں مختلف فیلڈز سے تعلق رکھنے والے لوگوں نے شرکت کی جن میں ماہرین اور ڈاکٹر عاصم رسول (جنرل منیجر مارکیٹنگ، UAF) اور ڈاکٹر عاصم رسول (جنرل منیجر مارکیٹنگ، CP) نے خصوصی شرکت کی۔ تمام شرکاء کی مزید رہنمائی کی۔ علاوہ ازیں پروفیسر ڈاکٹر طاہت نصیر پاشا (وائس چانسلر، UOE)، پروفیسر ڈاکٹر صائمہ (چیری پرسن، ڈپارٹمنٹ آف اینیمل نیوٹریشن، UVAS) اور پروفیسر ڈاکٹر ظفر حیات (UOS) نے آن لائن شمولیت کر کے اپنے خیالات کا اظہار کیا۔ ورکشاپ کے آخر میں پروفیسر ڈاکٹر جلس احمد (چیری پرسن، ڈپارٹمنٹ آف اینیمل سائنسز، CVAS) اور پروفیسر ڈاکٹر محمد فیاض

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