



VETNEWS

an official newsletter of

Nepal Veterinary Association

Vol. 3, Issue 3

March 2013

Hormonal Assay - Applications in Ruminant

Introduction:

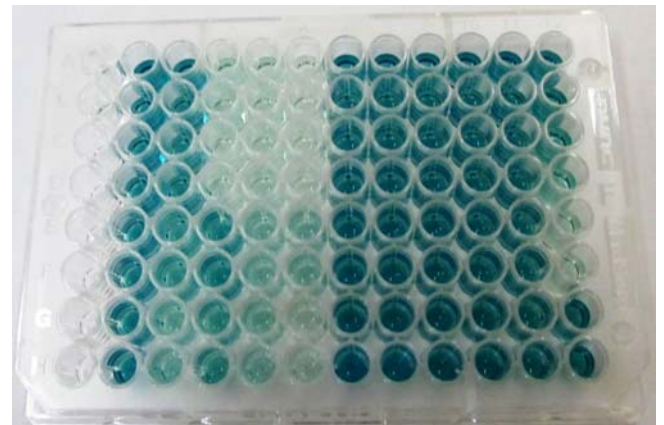
Pregnancy diagnosis, the process to detect whether the animal, after breeding is positive or negative for pregnancy, is the tool and the technique that can minimize the loss and maximize the profit. Early diagnosis of non-pregnant dairy cows and heifers can improve reproductive efficiency and pregnancy rate by decreasing the interval between artificial insemination (AI) services and increasing AI service rate. Rectal Palpation (RP) is the oldest and most widely used method for early pregnancy diagnosis in dairy cattle. However, a newer technology; the hormonal assay, may someday replace RP as the method of choice for pregnancy diagnosis in the dairy industry.

Hormonal Assay:

The main hormone of value for assessing reproductive performance in females is Progesterone (P4). The P4 can be measured via sample of Blood (plasma, serum), Milk, Urine, Faeces. The P4 level reflects activity of Corpus Lutea (CL) in cycling animals, activity of CL and placenta in pregnant animals and secretion from adrenal glands. In milk sample the P4 level is influenced by various factors like; level in blood, transfer to milk fat content, time of sampling in relation to milking or suckling, species and breed. But in blood, it is influenced by rate of secretion, metabolism and excretion.

In the immunoassay, the substance to be measured, (called the "analyte", usually an Ag) competes with a known quantity of the same sub-

stance that has been labeled" (Ag*, also called "tracer") with a compound that can be measured in minute quantities (radioactive substance or an enzyme) for binding to a limited amount of specific antibody (Ab) present in an assay tube. In Radio ImmunoAssay (RIA), the tracer is a radioac-



tive substance, which can be either a beta emitter (3-H tritium) or a gamma emitter (125-Iodine), and the radioactivity is measured in a beta or gamma counter, as counts per minute (CPM). In EIA (Enzyme immunoassay) and ELISA, the tracer is an enzyme (horseradish peroxidase, HRP), whose activity is measured by its ability to convert a substrate and cause a colour change in an indicator dye (H₂O₂+ABTS or TMB), which is then measured in a spectrometer (ELISA reader) as absorbance (Optical Density, OD).

For accurate interpretation, hormone assay should be done together with recording dates of calving, estrus and breeding, measuring changes



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Vets Inside

Dr. Jha get promotion to Joint Secretary

Dr. VC Jha has been promoted to Joint Secretary under MoAC. NVA would like to congratulate him and wish for his bright future.

Govt. appointee in NVC

Nepal Government has appointed Dr. Dhan Raj Ratala as chairman of Nepal Veterinary Council. Similarly, Dr. Narayan Ghimire has been appointed as Registrar of the council. Dr. Sita Ram Aryal has been appointed as member of the council. They will be serving the council for four years. Nepal Veterinary Association extends warm wishes to all the appointee.

Neutering support in Far-Western Region of Nepal

Under the leadership of NVA FWR chapter coordinator Dr. Hem Awasthi, who is one of the good surgeon and well experienced to work for ABC program of stray dogs, has step forward to work on neutering of stray /owned dogs and mass vaccination against Rabies in far western region of Nepal.

NVA FWR chapter has step forward to implement neutering of stray/owned dogs and mass vaccination against Rabies in Doti District. NVA FWR Chapter in collaboration with DLSO Doti and Dipayal Silgadhi Municipality spayed 25 stray bitches and vaccinated 76 dogs around Municipality.

*From the VETNEWS
Feb. 2013 issue, page
4, last column:
Correction: "Presiding
Chairman" instead of
"immediate past
president".*



←
Picture:
Surgical
operation
for Spay



News Inside

Birdflu Detected in Kathmandu

Kathmandu. Five outbreaks of avian influenza have been reported from Bagmati and Mechi zone of Nepal. Phedibazzar, Jitpurphedi 1, Kathmandu; Nayapati, Nayapti VDC 7, Kathmandu; Nepaltar, Manamaiju 1, Kathmandu; Sowkhel, Setidevi VDC 4, Kathmandu of BAGMATI zone and Anarmani, Anarmani VDC 1, Jhapa, MECHI are the outbreak hot spots of this outbreak.

Summary report can be clicked at http://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=12901

Trainings organized by NVA Eastern Region

Biratnagar. Nepal Veterinary Association Eastern Chapter organized Village Animal Health Worker (VAHW) Training started from 2069/09/23 to 2069/10/28 in partnership basis with Regional Livestock Services Training Center, Sunsari.

Also, the chapter has completed Technician Level Animal Breeding and Artificial Insemination Training partnership basis with Regional Livestock Training Centre, Duhabi first time in Nepal. The training was started from 9th Falgun, 2069 and ended in 20th Falgun 2069.

Upcoming Event

WORLD VETERINARY DAY 2013

Selected Theme 2013 — Vaccination : “Vaccination to prevent and protect”

The discovery of disease prevention through vaccination is one of the greatest scientific achievements. Vaccines are very valuable tools to stop the spread of a large number of transmissible diseases that threaten the health and welfare of animals and people.

Vaccination of animals helps people to protect their livestock and their companion animals, as well as themselves in case of zoonotic diseases. Through well organised campaigns, vaccination contributes to the eradication of diseases from certain areas and even from the world. A successful vaccination campaign depends mainly on the use of high quality vaccines, appropriate infrastructure to ensure the rapid and safe delivery of vaccines, monitoring of vaccinated flocks, movement control of animals, and adequate financial resources. The veterinary pro-

feSSION, through effective and efficient Veterinary Services, is crucial for the success of vaccination in animal health.

World Veterinary Association member organisations that celebrate World Veterinary Day alone or in cooperation with other veterinary bodies can participate in the competition of being selected WVD award winner of the year.

The 2013 Award will reward the veterinary association who will best promote the theme “Vaccination” by involving all stakeholders in the organisation of events along with all other stakeholders such as the media and the general public.

Source: www.worldvet.org





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in body weight and/or body condition score and clinical examination of reproductive organs. The levels for discriminating between presence and absence of CL activity should establish its own criteria. Generally used levels of progesterone in skim milk of cattle are;

Less than 1 nmol/lit = No CL activity

Between 1-3 nmol/lit = Doubtful range

More than 3 nmol/lit = CL activity present
(nmol/litre / 3.18 = ng/ml)

The actual values above and below the levels of discrimination have little significance.

Applications of Progesterone Radio ImmunoAssay (RIA) in Ruminants:

The advantages of these tests are that they can be conducted using a milk sample, which is easier for farm workers to collect than a blood sample, and the ability to conduct the test on the farm rather than sending the sample to a regional laboratory, which requires a minimum of 2 to 3 days turn around time to return the test information to the farm. The RIA needs just 2-4 hours to perform the test and interpret the result for reproductive efficiency. The progesterone RIA can be used in determination of onset of puberty, early diagnosis of non-pregnancy, diagnosis of infertility and pathological conditions, monitor post-partum ovarian activity, assess success rate of AI, identify problems and take steps for improvement, assess reproductive management by farmers, test interventions for improving reproductive efficiency; nutrition, restricted suckling, heat detection, reducing stress and diseases. The EIA is bit longer time taking (around 24 hours) and usually efficient in research.

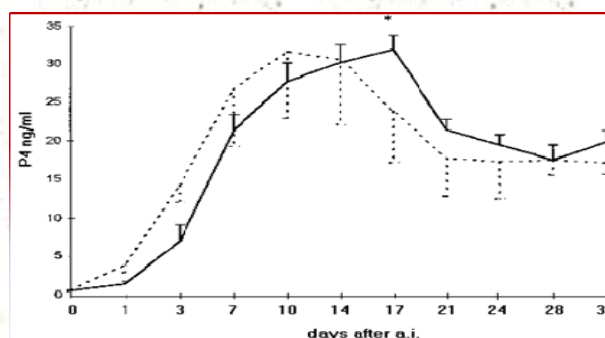
Assessing Heat Detection & Early Diagnosis of Non-pregnancy: Three milk samples, collected on Days 0, 10-12 and 22 - 24 after AI, are measured the progesterone level by RIA gives the clear idea about early diagnosis of non-pregnancy.

Low - Low - Low: Anoestrus/Anovulation (a)

Low - High - Low: AI at heat, Non-Pregnant (b)

Low - High - High: AI at heat, Pregnant? (c)

High - Low - High: AI at luteal phase



The following is the common procedure for early Non-Pregnancy Diagnosis suitable for Nepalese condition:

- **On day of AI:** Technician instructs farmer on procedure and gives a labeled tube containing a preservative tablet

- **On day 21 after AI:** Farmer takes a sample of milk from cow into tube and hands it to milk collection point

- Milk collection system returns samples with a form containing farmers' names/addresses to laboratory

- Laboratory does progesterone assay and returns the result to the farmer (with copy to AI service) within 10 days

- **If Non Pregnant:** farmer and technician alerted to the need for heat detection and repeat AI.

Common reasons for errors in hormone measurements are;

- pyometra/persistent corpus luteum
- short oestrus intervals
- cystic ovarian disease (luteal cysts)
- incorrect handling of the samples and test kit.



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