

Laboratory	Central Military Veterinary Laboratory (CMVL), Sardhana Road, Meerut Cantt., Uttar Pradesh		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Biological Testing	Issue Date	24.11.2013
Certificate Number	T-1694	Valid Until	23.11.2015
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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I. VETERINARY TESTING

A. BIOCHEMISTRY

1. Serum samples of Bovines, Equines & Canines		Estimation of Biochemical profile by semi-automated/ fully automated serum biochemistry analyzer		
	Total Protein (TP)		Biuret method, Endpoint (SOP/Biochem/01 and SOP/Biochem/28)	0.5-15g/dl
	Albumin		BCG Dye method (SOP/Biochem/02 and SOP/Biochem/17)	0.1-6g/dl
	Globulin		Calculated (SOP/Biochem/02 and SOP/Biochem/17)	NA
	AST (SGOT)		IFCC method, Kinetic, no P-5-P, 37°C (SOP/Biochem/03 and SOP/Biochem/18)	5-450 U/L
	ALT (SGPT)		IFCC method, Kinetic, no P-5-P, 37°C (SOP/Biochem/04 and SOP/Biochem/19)	5-450 U/L
	ALP		pNPP-AMP IFCC method, Kinetic, 37°C (SOP/Biochem/06 and SOP/Biochem/21)	10-1000 U/L

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	Bilirubin		Diazo method, End point (SOP/Biochem/05 and SOP/Biochem/20)	0.1-20 mg/dl
	Urea		GLDH Urease method (SOP/Biochem/07 and SOP/Biochem/22)	2-250 mg/dl
	BUN		Calculated (SOP/Biochem/07 and SOP/Biochem/22)	NA
	Creatinine		Jaffe's method, Initial rate (SOP/Biochem/08 and SOP/Biochem/23)	0.1-20 mg/dl
	Cholesterol		CHOD-PAP method, End point (SOP/Biochem/09 and SOP/Biochem/24)	1-600 mg/dl
	Calcium (Ca)		OCPC method, End point (SOP/Biochem/10 and SOP/Biochem/25)	0.1-20 mg/dl
	Phosphorus (P)		Amm Molybdate method, End point (SOP/Biochem/11and SOP/Biochem/26)	1-15 mg/dl
	Magnesium (Mg)		Calmagite-EGTA-Colorimetric method (SOP/Biochem/12 and SOP/Biochem/27)	0.1-5 mg/dl

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2.	Urine samples of Bovines, Equines & Canines	Routine		
		a) Chemical	Multiple Reagent Strips based qualitative urinalysis	+ve or –ve / Variable sensitivity
		1. Glucose	Glucose oxidase-peroxidase (SOP/Biochem/13)	
		2. Bilirubin	Diazotized dichloroaniline (SOP/Biochem/13)	
		3. Ketone	Nitroprusside (SOP/Biochem/13)	
		4. Specific Gravity	pH indicator (SOP/Biochem/13)	
		5. Protein	Protein-error-of-indicators (SOP/Biochem/13)	
		6. Blood	Peroxidase (SOP/Biochem/13)	
		7. pH	Double indicator (SOP/Biochem/13)	
		8. Urobilinogen	Modified Ehrlich method) (SOP/Biochem/13)	
		(b) Microscopic exam of urine	Microscopy (SOP/Biochem/14)	
B. ANIMAL NUTRITION				
1.	Animal Feed & Fodder		Amendment No 2, Sep 1991 to IS 7874 (Part-1):1975 Methods of tests for animal feed and feeding stuffs. & Laboratory Manual of Animal Nutrition by Sastry VRB, Kamra DN & Pathak NN, Mar 99.	
		Moisture	(SOP/Nutri/01)	1 - 90 %
		Dry Matter (Calculated)	(SOP/Nutri/04)	10 - 99 %
		Crude Fat	(SOP/Nutri/03)	0.5 - 25 %
		Crude Protein	(SOP/Nutri/05/06)	2 - 70 %
		Crude Fiber	(SOP/Nutri/05/06)	3 - 60 %
		Total Ash	(SOP/Nutri/07)	1 - 20 %
		Acid Insoluble Ash	(SOP/Nutri/08)	0.1 - 15 %

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Appearance	Visual examination	NA
Odour	Visual examination	NA

C. HAEMATOLOGY

1. Blood Samples from Equines, Canines & Bovines	Complete Blood Count	Manual Method	
	1. Hemoglobin	Cyanmethaemoglobin methods (SOP/HEMATO/02)	2 to 30 Gm%
	2. TLC	Hemocytometer method (SOP/HEMATO/04)	0.1 - 20x10 ⁶ /μl
	3. DLC	Staining and microscopic examination (SOP/HEMATO/08)	
	- Neutrophil		1-100 %
	- Lymphocyte		1-100%
	- Monocyte		1-100%
	- Eosinophil		1-100%
	- Basophil		1-100%
	4. TRBC	Hemocytometer method (SOP/HEMATO/05)	0.1 - 20x10 ⁶ /μl
	5. ESR	Westergren's, Wintrobe's & Automated ESR counter methods (SOP/HEMATO/07)	1 – 200 mm/h
	6. PCV	Wintrobe's & Microhaematocrit method(SOP/HEMATO/03)	1 to 100%
	7. Platelet Count	Hemocytometer method (SOP/HEMATO/06)	0.1 - 20x10 ⁶ /μl

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	Blood Samples from Equines, Canines & Bovines	<u>Complete Blood Count (CBC)</u>	Automated hematology analyzer MS4S	
		Hb	Hb measurement by stabilized reduced Hb with photometry at 540 nm (Drabkin's method) (SOP/HEMATO/10)	0 - 24 g/dl
		Hct	Cell counts by electrical	NA
		RBC	impedance methods	0 - 70%
		WBC	(SOP/HEMATO/10)	0 - 8 $10^6 / \mu\text{l}$
		Thrombocytes		0 - 200 $10^3 / \mu\text{l}$
		DLC		0 - 1000 $^{(3)} 10^3 / \mu\text{l}$
		MCV		NA
		MCH		NA
		MCHC		NA
2.	Blood Smears from Equines, Canines & Bovines	Examination of stained blood smear for blood protozoa (Babesia spp, Theileria spp, Trypanosoma spp, Anaplasma spp, Ehrlichia spp & Hepatozoon spp)	Microscopic examination (SOP/HEMATO/08)	+ve or -ve / Variable sensitivity
D. PARASITOLOGY				
1.	Fecal samples from Equines, Canines & Bovines	Microscopic examination of fecal samples for detection of parasitic ova	Microscopic examination (SOP/PARASITO/02)	+ve or -ve/ Variable sensitivity
2.	Skin scraping from animals	Examination for mite infestation	Microscopic examination (SOP/PARASITO/04)	+ve or -ve / Variable sensitivity

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E. PATHOLOGY

1.	Morbid Tissue Samples in formal saline from animals	Histopathological Examination	Sectioning and H&E staining of Paraffin embedded tissues (SOP/PATHO/01)	Subjective Analysis
2.	Brain Tissue Samples from animals in 50 % Glycerol saline	Demonstration of Negri bodies	Seller's staining and microscopic examination (SOP/PATHO/02)	Subjective Analysis

F. SEROLOGY

1.	Serum Samples from Bovines	Tube Agglutination Test to determine antibody titer against Brucellosis	STAT procedure provided by IVRI, Izatnagar, Bareilly (SOP/SERO/01)	Nil to 1:80 titre / 1:10 titre
2.	Serum Samples from Equines	Tube Agglutination Test to determine antibody titer against Salmonella	STAT procedure provided by IVRI, Izatnagar, Bareilly (SOP/SERO/02)	Nil to 1:400 titre / 1:10 titre
3.	Serum Samples from Equines	Complement Fixation Test (CFT) for Glanders	OIE (2008): Manual of Diagnostic tests and vaccines for terrestrial animals, 6th ed., Paris, France. pp. 919-928. (SOP/SERO/04)	Nil to 1:128 titre / 1:2 titre
4.	Serum Samples from Canines	Immunocomb 'Ready to Use' test to detect antibodies against Leptospirosis, Ehrlichiosis, CPV/CDV & ICH	Instruction Manual provided by the Kits manufacturer (Biogal, Israel). (SOP/SERO/05, SOP/SERO/06 and SOP/SERO/07)	-ve to High +ve / > 95% Sensitive

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5.	Serum Samples from Bovines	ELISA test to detect IgG antibodies against Infectious Bovine Rhinotracheitis Virus	Ab-ELISA kit protocol as provided by manufacturer i.e. Project Directorate on Animal Disease Monitoring and Surveillance, ICAR, Bangalore (SOP/SERO/08)	-ve to High +ve / > 95% Sensitive
G. VIROLOGY				
1.	Serum Samples	Coggin's Test for detection of Equine Infectious Anemia	OIE Reference Test Manual of Diagnostic tests and vaccines for terrestrial animals, 6th ed., Paris, France (SOP/VIRO/07)	+ve or -ve / > 95% Sensitive
2.	Clinical Samples (Nasal swabs) from equines	HA Test for detection of Equine Influenza Virus antigen	OIE Reference Test. Manual of Diagnostic tests and vaccines for terrestrial animals, 6th ed., Paris, France. (SOP/VIRO/05)	Nil to 1:512 titer / 1:2 titer
3.	Serum Samples from equines	HI Test for detection of Antibody titer against Equine Influenza Virus	OIE Reference Test. Manual of Diagnostic tests and vaccines for terrestrial animals, 6th ed., Paris, France. (SOP/VIRO/06)	Nil to 1:512 titer / 1:8 titer
4.	Clinical Specimens from Canines & Equines	Virus Isolation and Confirmation in Animal Cell Culture System	OIE and Other Reference Standards(SOP/VIRO/01)	+ve or -ve / > 90 % Sensitive
5.	Clinical Specimens from Canines	Haemagglutination(HA) test for Canine Parvo Virus and Canine Adeno Virus antigen detection	International Reference Standards(SOP/VIRO/02)	Nil to 1:512 titer / 1:2 titer

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6.	Serum samples from Canines	Haemagglutination Inhibition (HI) test for Canine Parvo Virus antibody detection	International Reference Standards(SOP/VIRO/03)	Nil to 1:2560 titer / 1:20 titer
7.	Clinical Specimens from Canines (Blood, serum, stool, tissues, nasal and conjunctival swabs)	Rapid detection of antigen for Canine Parvo Virus, Canine Corona Virus, Canine Adeno Virus, Canine Distemper Virus & Heartworm disease by 'ready to use' diagnostic kits using dot ELISA method.	As per instructions contained in kit inserts. (SOP/VIRO/08 and SOP/VIRO/09)	+ve or –ve Variable Sensitivity for different tests as per kit inserts
8.	Brain tissue samples from animals on ice/ in 50 % Glycerol saline	Rapid antigen detection kit	As per instructions contained in kit inserts. (SOP/VIRO/11)	+ve or –ve Variable Sensitivity for different tests as per kit inserts
H. MOLECULAR BIOLOGY				
1.	Clinical Specimens from Bovines, Canines & Equines	PCR Test for detection of: Tuberculosis Equine Herpes Virus-1 Canine Adenovirus 1 Canine Adenovirus 2 Canine Parvovirus	Reference Articles published in national journals & Lab standardization. SOP/BIOTECH/01 SOP/BIOTECH/03 SOP/BIOTECH/04 SOP/BIOTECH/05 SOP/BIOTECH/11	+ve or –ve / > 90 % Sensitive
I. BACTERIOLOGY				
1.	Clinical specimens from diseased animals	Culture and Identification of pathogenic bacteria	Clinical Veterinary Microbiology by Quinn et al (1999): pp 35. (SOP/BACT/02)	+ve or –ve / > 95% Sensitive

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2.	Clinical specimens from diseased animals	Antibiotic Sensitivity Test	Clinical Veterinary Microbiology by Quinn et al (1999): pp 95. (SOP/BACT/15)	+ve or –ve / > 95% Sensitive
3.	Clinical specimens of cattle	Identification of Acid Fast Bacilli (AFB) by ZN Staining	Diagnostic Microbiology by Forbes et al (2007):pp 86, 12th Edn (SOP/BACT/03)	+ve or –ve / > 95% Sensitive
4.	Animal Feed & Fodder samples	Estimation of Microbial load	Clinical Veterinary Microbiology by Quinn et al (1999): p 35. (SOP/BACT/16)	Nil to 400 CFUs per gm/ 1 CFU per gm

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