ISBN 978-602-70438-0-0

PROCEEDING

International Seminar

THE ROLE OF VETERINARY SCIENCE TO SUPPORT MILLENNIUM DEVELOPMENT GOALs and THE 12th ASIAN ASSOCIATION OF VETERINARY SCHOOLS CONGRESS

FACULTY OF VETERINARY MEDICINE
UNIVERSITAS AIRLANGGA

CERTIFICATE OF ATTENDANCE

This is to certify that

Budi Utomo

AS SPEAKER

in INTERNATIONAL SEMINAR
THE ROLE OF VETERINARY SCIENCE
TO SUPPORT MILLENNIUM DEVELOPMENT GOALS

was held in JW Marriott Hotel Surabaya - Indonesia
September 5th - 6th, 2013

President of AAVS
Dean of Faculty Veterinary Medicine
Universitas Airlangga - Indonesia

Prof. Hj. Romziah Sidik., DVM., Ph.D.

PROCEEDING

International Seminar

THE ROLE OF VETERINARY SCIENCE TO SUPPORT MILLENNIUM DEVELOPMENT GOALs AND THE 12th ASIAN ASSOCIATION OF VETERINARY SCHOOLS CONGRESS

JW MARRIOTT HOTEL, SURABAYA-INDONESIA
4th - 6th SEPTEMBER 2013

Editors :
Rahaju Ernawati
Fedik Abdul Rantam
Bambang Sektiari
Didik Handijatno
Mustofa Helmi Effendi
Dadik Raharjo
Epy Muhammad Luqman
Lita Rakhma Yustinasari
Widya Paramita Lokapirnasari

FACULTY OF VETERINARY MEDICINE
UNIVERSITAS AIRLANGGA

PROCEEDING

International Seminar

THE ROLE OF VETERINARY SCIENCE TO SUPPORT MILLENNIUM DEVELOPMENT GOALs AND THE 12th ASIAN ASSOCIATION OF VETERINARY SCHOOLS CONGRESS

ISBN : 978-602-70438-0-0

@ FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA 2013
Hak cipta dilindungi oleh Undang-Undang

Diterbitkan Oleh :
Faculty of Veterinary Medicine Universitas Airlangga
Kampus C Mulyorejo Surabaya 60115
Telp. (031) 5992785, 5993016
Fax. (031) 5993015
e-mail : fkh@unair.ac.id
Website : http://www.fkh.unair.ac.id

REMARKS OF ORGANIZING COMMITTEE THE ROLE OF VETERINARY SCIENCE TO SUPPORT MILENIUM DEVELOPMENT GOALs

Dr. Dadik Raharjo, M.Kes, DVM.
Chairman

Ladies and Gentleman,
I have the honour of welcome delegates and speakers in International Seminar with the title"role of veterinary science to support milenium development goals" and highest ours appreciation for Your participation on this seminar.

The seminar will exchange information that we can carefully increasing the role of veterinary science to support development goals. Hopefully through this event will take advantage of the many opportunities to colloborative work between indonesia instituion and also with overseas institution.

On behalf of Organizing committe, I would like to express our sincere gratitude and thanks to all participant at this seminar international.

I hope that this program will be useful and enjoy during stay in Surabaya.

Best Regards

REMARK OF DEAN FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA AAVS PRESIDENT

Prof. Romziah Sidik, Ph.D., DVM.

Bismillahi rochmanir rochim,
Assalamu'alaikum warochmatullahi wabarokatu.

Good morning Ladies and Gentlemen,
Welcome to Surabaya, East Java – Indonesia.

On behalf Faculty of Veterinary Medicine, Universitas Airlangga and Asian Association of Veterinary Schools, I would like to say thank you for the Excellencies: Rector Universitas Airlangga, The Director General of Livestock and Animal Health-Ministry of Agriculture-Republic of Indonesia: Ir. Syukur Iwantoro, MS), The Coordinating Minister for people's Welfare Republic of Indonesia: Dr. Agung Laksono; The OIE Sub Regional Representation for South-East-Asia delegates (Dr. Dirk Van Aken, Dr, Mary Joy Gordoncillo, Dr. Ronello Abila and Ms.Melada Ruengjumroonnath), the Presidents of SEAVSA (Dr. Srihadi agung Priyono) President of IVSA (Indonesian Veterinary School Association): Prof. Made Dhamriyasa, and all Deans of SEAVSA (South-East Asia Veterinary School Association) members, AAVS (Asian Association of Veterinary Schools: Japan, Korea, Taiwan, Indonesia, Malaysia, Thailand, Philippines, Mongolia, Vietnam, Myanmar, Lao and Cambodia) and IVSA (Indonesian Veterinary School Association), The President of Indonesia Veterinary Medicine Association: DVM.Wiwiek Bagja), Quarantine and Inspection Agency Commissioner of Korea: Prof Yong Ho Park), Secretary General and Asian Society of Zoo and Wild Life Medicine: Dr. Kimmura Junpei; All the invite speakers comes from: Faculty of Medicine, Faculty of Veterinary Medicine and Tropical Disease Center of Universitas Airlangga, Feed Technology and Nutrition, Research Institute for Animal Production,-Indonesia, College of Veterinary Medicine Murdoch University, Division of Molecular Medicine and medical Genetic, Department of Pathology, Kobe University, Universiti Putra Malaysia, Graduate School of Agricultural and life Sciences University of Tokyo Japan;

The honorable of all presenter and participants, also the sponsorships who are joint in the International Seminar with the themes:"The Role of Veterinary Science to Support Millennium Development Goals and the 12th Asian Association of Veterinary Schools Congress" during 2 days (5th-6th September 2013), which is Faculty of Veterinary Medicine of Universitas Airlangga as the hosted of the event.

Ladies and Gentlemen,

About 193 United Nation member states and at least 23 international organizations declared Millennium Development Goals (MDGs), and they have agreed to achieve the nine MDGs such as: eradicating extreme poverty and hunger, universal primary education, promoting gender quality, and empowering women, reducing child mortality rates, improving maternal health, combating HIV /AIDS, malaria and other diseases, ensuring environmental sustainability, and developing a global partnership for development.

Animal diseases which form an epizootic (Apthae epizootic, mad cows diseases) and or zoonotic like Avian Flu, SARS (Severe Acute Respiratory Syndrome), Salmonellosis, Brucellosis, tuberculosis, rabies are threat to global security warned by Director General of the Word Organization as well as World Animal Health Organization (OIE). These diseases have potentially disastrous consequences if it's not eliminates at their primary source. As we know that about systemic review of 1,415 pathogens are known about 61% infects humans.

To combat and fighting zoonosis diseases, Indonesia has launching the National Commission of Zoonosis Control under Coordinator Minister for people's Welfare Republic of Indonesia.

So, the Veterinary Medicine Schools in Asian country has responsibility to provide some courses in the curricula to achieve Day one competencies. Four pillars could be strengthening by Veterinary School such as: education system, research, public extension and or services, and collaborations. The quality assurance should be guaranteed by each Veterinary Schools. In the event of AAVS congress programs to produce and launch the Logo of AAVS, and the consequence to be added the logo profile and philosophy in AAVS by Law. The other program is to perform Veterinary school curricula and gap analysis. Therefore, Veterinary school curricula in Asian country could be standardized.

On behalf Organizing Committee, I would like to say thank you to Director Research and Public Community Services Board of Directorate General of Higher Education, Ministry Education and Culture Republic of Indonesia, The OIE SRR SEA, Faculty of Veterinary Medicine Universitas Airlangga, IVSA, and the sponsorships from veterinary industries for supporting finance that the event become perform by successfully.

Ladies and Gentlemen,

Again, I would like to say thank you for your participative to the event, and please follow and enjoy the programs as well as your visit in Surabaya by happiness.

Billahi taufik wal hidayah, Wassalamu'alaikum warohmatullahi wa barokatu.

REMARKS OF RECTOR OF UNIVERSITAS AIRLANGGA

Prof. Dr. H. Fasich, Apt.

Assalamu'alaikum Warahmatullahi Wabarakatuh

First of all, let us pray to Allah SWT that because of His blessings we are able to be here in this very important event.
Secondly, I would like to say to all participants: Welcome to Surabaya, East Java, Indonesia!
It is indeed a great honour for me to have the opportunity to be among the participants of this very special occasion, where all of us are going to have in-depth discussion about a very important and interesting topic closely related to veterinary science and the millennium development goals as a way to increase the quality of human health.
Indonesia's Millennium Development Goals (MDGs) are based on the eight international development goals that were officially established following the Millennium Summit of the United Nations in 2000, one of touches on the effort to combat wide-spread diseases such as HIV/AIDS and diseases transmitted by animals such as malaria, avian flu, swine flu, and so forth, which could be a serious threat to global security and human development.
Therefore, concerns over these MDGs from the point of view of veterinary science, especially among the researchers, have to be raised these day. There are numerous recent for conducting scientific research and other scientific activities to bring the MDGs to a success.
In this very special event, I would like to express my deepest appreciation to all members Asian Association of Veterinary Schools for their success in conducting better and better collaborations. Such collaborations are a pre-requisite for all efforts in improving performances, including the standardization of veterinary curricula in the ASEAN region and among Asian countries, in controlling the spread of zoonosis, and in developing and improving bio safety, bio security, surveillance, animal health and animal production.
I strongly believe and hope that this seminar and congress will be able to strengthen the existing networks that occurred among all the members of the association, as the main step in the eradication and prevention of infectious diseases, especially once that are related to animals, to support the Millennium Development Goals.
To all participants, I would like to thank you very much for coming to this forum. And to the organizing committee, I would like to give my sincerest appreciation for their wonderful job and hardwork in organizing this event.
I hope the seminar and the congress will be fruitful to all of use and lastly, please enjoy your stay in Surabaya.
Thank you very much,

Wassalammu'alaikum warahmatullahi Wabarakatuh.

List of Content

Page

Arts in Pig, Sheep and Goat: Experiences in Thailand
M Techakumphu, C. Tretipskul, N, Anakkul, S. Panyaboriban[1], J. Suwimon-teerabutr and T. Tharasanit 1

Food Security - The Role of Veterinarians in an Emerging World Problem
ID Robertson 6

Past, present and Future of Asian Society off Zoo and Wildlife Medicine (aszwm)
Junpei Kimura 11

Standardized Veterinary Competence to Support Global Food Security and Infectious Animal Disease Control
Wiwiek Bagja 12

How to Implement Policies and Regulations to Control Antimicrobial Resistance in Animal Husbandry?
Yong Ho Park 13

Warning for Animal Parasites on HIV/AIDS Patients
Nasronudin 16

Vector Vaccines: a New Generation of Veterinary Vaccines
M. Hair-Bejo 21

One Health System for Controlling Zoonotic Diseases
Srihadi Agungpriyono, Denny Widaya Lukman 25

Development of a Novel Oral Contraceptive for the Population Control of Wild Mammals Based on the Neuroendocrine Mechanism Generating Gonadotropin Releasing Hormone (GNRH) Pulse Generation
Kei-ichiro Maeda, TanuPinyopummintr, Hiroko Tsukamura 27

Reflection of Animal Welfare Principles as a Part of Professionalism
Romziah, S. 31

Non Typhoidal Salmonellosis as Food Borne Disease
Dadik Raharjo 37

Current Issue on Feed Additives Utilization in Indonesia
Budi Tangendjaja 42

Mitochondrial Genetic Defect And Disease in Human
Agung Pranoto 51

Semen Characteristics of Captive Sumatran Tiger (*Panthera tigris Sumatrae*)
Ni Wayan Kurniani Karja, Mokhamad Fahrudin, Mohamad Agus Setiadi, Ligaya ITA Tumbelaka, Retno Sudarwati, Yohana Tri Hastuti, Bongot Huaso Mulia Ardyta Widianti, Keni Sultan, Kazuhiro Kikuchi, Takeshige Otoi 52

Rabies In Animals In Bali Province from 2008-2012
I Ketut Eli Supartika, I Ketut Wirata, I Gede Joni Uliantara, I Wayan Masa Tenaya, I Ketut Diarmita 56

Effectiveness of Red Algae (*Eucheuma Spinosum*) as Pathogenic Antibacterial in Coastal Organisms and Human
Fattah, Afhariman, Muslimin, L, R, W Andy Omar, S. Bin 63

Anti-*Coxiella Burnetii* Antibody Specific for Q Fever Diagnosis Immunohistochemically in Ruminant
Agus Setiyono, Mawar Subangkit, William Marea, Vivi Dwi Santi, Lia Elvira, Mutya Fadhilah and Sulfhi Aufa 69

Identification of Patogenic Bacteria *Escherichia Coli O157:H7* and *Staphylococcus Aureus* from Pasteurised and Non Pasteurised Bovine Fresh Milk
Lucia R.Winata Muslimin, Dwi Kesumasari, M. Aqshar Marsani, Nurul Inayah, Ainin arsylini, and A.Aswan Salam 73

Clinical Sign Pattern of Infection *Microsporum canis* on Dogs
Gerson Yohanes I Sakan, Puspa Wikan Sari, Yanuartono and Soedarmanto Indarjulianto 77

Detection of Autoimmune Thyroiditis Diseases (Aitd) : Based on Thyroid Peroxidase (TPO) Autoantibody by Immonochromatography Rapid Test
Aulanni'am, Agung Pramana. W.Marhendra and Dyah Kinasih Wuragil 81

The Effect of Probiotic on *Autoimmune Thyroiditis Model* (AITD) Rat (*Rattus norvegicus*) Induced Sodium Iodide (NaI) Supplementation
Hendra Legatawa, Wakhidatus Inrya, Adib Musta'in, Rizki Rosmallasari, Bayu Noviaji, Dyah Kinasih Wuragil and Agung Pramana W. Marhendra 85

Analysis of *Salmonella spp.* from Poultries Carcasses Industries in Malang, Indonesia
Dyah Kinasih Wuragil, Masdiana C. Padaga 90

Molecular Genetic Analysis of Indigenous Bima Horse (*Equus Caballus*) Based on Cytochrome B Sequences
Yuriadi, Rini Widayanti, Wayan Tunas Artama, Charles Rangga Tabbu........ 94

The Study of Binahong Leaves Extract *(Anredera cordifolia*) Ointment Ethanol Fraction on Skin Incision Wound Healing Process in Dog (*Canis familiaris*)
Slamet Raharjo, Sri Hartati, Agus Budi Santosa, Fajar Kurnniawan 102

Improving Milk Quality and Udder Health of Etawah Crossedbred Goat by Good Milking Procedure
Yuni Suranindyah, Sari Retno Diwanti· Ditto Aji Diantha· Nurliyani 107

Blood Chemistry Parameters of Adult Female Turi Ducks
Irkham Widiyono, Sri Hartati, Hary Purnamaningsih 112

The Influence of *Temu Hitam (Curcuma aeruginosa* roxb.) Rhizomes Ethanolic Extract Against Total Intraepithelial Lymphocyte Small Intestine on Layer Chicken Which Infect by *Ascaridia galli*
Handayu Untari, Eka Pramyrtha Hestianah 117

Potential of Beluntas (Plucea indica l.) in Animal Feed to Decrease the Ammonia, Hydrogen Sulfide and Water Levels on Broiler Excreta
Taufik Hidayatulloh· Anggun Rahmawati· Zakia Sheila Faradilla 121

The Xenobiotic Metabolism in Lead Intoxication Mice with Vitamin C Supplementation
Juliana Christyaningsih 127

The Analysis of Distribution of *Mycobacterium bovis* Infection with Conventional Techniques, Polymerase Chain Reaction (PCR) and Geographical Information System (GIS) in Dairy Cow Cattle in Enrekang Regency
Sartika juwita, Moch. Hatta, Lucia Muslimin, Ahmad Nadif 135

The Effect of Cigarette Smoke Exposure due to Placental Apoptosis and Gestation Outcomes at Gestation Disorders Mechanism in White Rat (*Rattus Norvegicus*)
Portia Sumarsono, Sruti Listra Adrenalin, Ika Wahyuni, Bayu Digka, Christian Marco, and Widjiati 143

Some Factors that May Increase the Potency of *Trypanosomiasis* that was Caused by *Trypanosoma Evansi* to Become Zoonosis: A Review
Herlina Susijanti, Fx. Satria Pinanditya, Rian Hari Suharto 148

Antibiotic Resistance in *Staphylococcus intermedius* Strain Isolated from Dogs with Dermatological Disorders
Mustofa Helmi Effendi, Ngakan Made Rai Widjaja and Ristin Riwayanti 152

Combination of *Spirulina* and Fermented Rumen Content Meal As Substitution in Feed Toward Feed Efficiency of Male Broiler
Mirni Lamid 156

Potential of Vitamin E (α-Tocopherol) Against on Spermatogenic Cells and Seminiferous Tubule Diameter Testes of Mice (*Mus Muscular*) Induced with 2, 3, 7, 8-Tetrachlorodibenzo-P-Dioxin (TCDD)
Rosida Achlis, Ismudiono, Hani Plumeriastuti 160

The Activity of Vitamin E (*α -Tocopherol*) as an Antioxidant on Histophatology of Balb/C Mice's Liver Exposured by *2,3,7,8-Tetrachlorodibenzo-P-Dioxin* (TCDD)
Ajeng Erika Prihastuti Haskito, Dewa Ketut Meles, Hani Plumeriastuti 166

***α Tokoferol* in Sperm Muscovy Retailed During Storage to Temperature 27°C.**
Fitriani 174

Prevalence and Infection Rate of Gastrointestinal Nematodosis of Limousine and Simmental Crossbreed in the Loceret District Nganjuk
Hasutji Endah Narumi, Mamluatus Sa'diyah, Setiawan Koesdarto 177

The Use of *Spirulina* in Substitution of Rumen Content Meal Wich is Fermented in Feed on Carcass Percentage of Male Broiler
Mia Anjar Sari, Wurlina, Mirni Lamid 181

Crude Fiber Digestibility Value of Complete Feed with Omega 9 in the Javanese Fat Tailed Sheep
Ninik Rahayuningsih, Tri Nurhajati, Romziah, S, Mirni, L, Retno, S.P 183

Understanding the Biological Products and Development of Biosimilars
Nurina Hasanatuludhhiyah, Abdul Khairul Rizki Purba 185

Protein Digestibility Value of Complete Feed With Omega 9 on Javanesse Fat Tailed Sheep
Virdhanur Chorina, Tri Nurhajati, Romziah Sidik, Mirni Lamid 191

Embryo Collection toward Different Doses of PMSG in Rats (*Ratus norvegicus*)
Bambang Poernomo S 194

Identical Twins Production of Rat (*Ratus norvegicus*) Through a Metal Razor Blade
Bambang Poernomo S 197

Clinical Case and Incidence Rate of Mite Infestation on Dog by Scraping Examination at Veterinary Teaching Hospital of Faculty of Veterinary Medicine, Bogor Agricultural University
Agus Wijaya 201

Effect of Oviduct Flushing Fluid Addition on Polyspermy Rate of Goat Oocyte in *In Vitro* Fertilization
Yayuk Kholifah, Sri Pantja Madyawati, Wurlina 205

Therapeutic Effectiveness of Rat Bone Marrow Stem Cells in Rats (*Rattus Novergicus*) Model Exposed to Particulate Matter on Congenital Defects
Sri Pantja Madyawati, Widjiati, Rimayanti, Agung Budianto 209

Expression of Cytochrome C as Apoptotic Indicator and it Relation With Sper Viability and Motility of Domba Ekor Gemuk Frozen Semen In Differe Thawing Duration
Rahmalia Dwi Suindarti, Imam Mustofa, Suherni Susilowati 213

Effects of the Timing of Insemination by The Use of a Heat Detector on the Incidence of Metestrous Bleeding and Non-Return Rate at Day 21
Ismudiono, Pudji Srianto and Trilas Sardjito 217

Rapid Detection and Phylogenetic Analysis of West Nile Virus as Zoonosis New Emerging Disease in Patients with Fever of Unknown Origin (FUO) in Surabaya
E. Bimo Aksono H, Nasronudin, Maria Inge Lusida, Aldise Marieta N, M. Qushai, N. Fajar, Lilis Mundri Jannah, Brian Eka Rachman, Musofa Rusli 221

Comparative Study of Pathogenicity Of H5n1 Virus Between in Tree Sparrow, Scaly Breasted Munia,And Backyard Chickens As Natural Source of Infection in East Java – Indonesia
Emmanuel Djoko Poetranto, Djoko Legowo, Suwarno, Fedik A Rantam........ 226

Toxoplasmosis :Changes in Trophoblast Apoptosis index Mice (*Musmusculus*) Given Anti-*Toxoplasma gondii* ESA (Excretory Secretory Antigen) Immunoglobulin Y
Lucia Tri Suwanti, Hani Plumeriastuti, Dessy Fajarwati 233

Egg Yolk Derived Anti-Rabies Antibody Production as Immunotherapy Agents
Suryo Kuncorojakti 240

Relations of Weight And Age to The Front Feet Sole Area of Merino Ram
Benjamin Christoffel Tehupuring, Dady Soegianto Nazar, Sarmanu........ 244

Molecular Characterization of Nucleoprotein *Antigenic Sites* of Indonesian Isolate Rabies Virus
Jola Rahmahani and Suwarno 248

Homology Analysis of G Protein Coding Genes of Rabies Virus Sulawesi Isolate Against Pasteur Strain
Riski Arya Pradikta and Suwarno 254

The Production of Plastic Progesterone Implants for Estrus Synchronization in Big Tail Sheep From Sapudi Island
Sunaryo Hadi Warsito, Setyawati Sigit, Herry Agoes Hermadi 258

Production of Frozen Dry Equine Chorionic Gonadotrophin (eCG) from Pregnant Mare Sera
Herry Agoes Hermadi, Laba Mahaputra 262

Acrosin Half-Breed Etawa Goat (PE) Sperm Characteristic to Increase Spermatozoa Quality
Budi Utomo 270

The Prevalence of Intestinal Tract Worm Disase of Beef Cattle Brahman and Peranakan Ongole (Po) in the Subdistrict Sugio, Lamongan
Faris Amsyari Khozin, Sri Mumpuni Sosiawati, Husni Anwar Kusnoto 282

Osteopontin Maintain Post-Thawed Sperm Mitochondrial Potential Membrane of Friesian Holstein Bull
Tatik Hernawati, Yudit Oktanella, Abdul Samik, Ngakan Made Rai Widjaja 287

Protein Utilization of Spirulina in Response to Protein Efficiency Ratio in Laying Hens
Widya Paramita Lokapirnasari 293

28-DAY NON RETURN RATES OF DAIRY COWS AS BOTH ACCEPTORS AND RECIPIENTS
Trilas Sardjito, Pudji Srianto and Ismudiono 296

Hymenolepiasis Nana, is a Scarce Case in Zoonosis
R. Heru Prasetyo 299

Financial Analysis of Layer Chicken Farms in Sub-District Kedungpring of Lamongan
Sunaryo Hadi Warsito 302

The Potency of Protein Ghrelin and Neuropeptide Y as Materials for Energy Balance to Set Feed Efficiency of Broiler Chicken
Nove Hidajati Romziah Sidik, Ratna Damayanti 306

Proteins Signal Tranducers and Activators Transcription (STAT) 5a and 5b as a Candidate Growth Promoter on Broiler Chicken
Anwar Ma'ruf, Romziah Sidikand Kuncoro Puguh S 310

Comparison of The Spermatozoa Quality of Post Thawing Simental Cow That Centrifugated Use Yolk Skim Diluter and Soya Lecithin With *Malondialdehyde* (MDA) Level Measurement
Novia Candrawati, Suherni Susilowati, Bambang Purnomo 314

Incidence Rate and Small Animal Geriatric Diseases in Veterinary Teaching Hospital Airlangga University Surabaya on 2010-2011
Nusdianto Triakoso 318

(In Vitro)* Antibacterial Activity of the Supernatant of Shrimp Pond Isolate *Bacillus subtilis* Against *Aeromonas hydrophila* and *Staphylococcus aureus
Erni Rosilawati Sabar Iman, Elyza Noor Fitria, Suzanita Utama 323

The Effect of Anti- *Toxoplasma gondii* Esa Immunoglobulin Y (IgY) Againts Liver Damage in Mice Gestation were Infected Tachyzoite *Toxoplasma gondii*
Lucia Tri Suwanti, Hani Plumeriastuti, Basuki Suryo Jatmiko 328

Effect Various Height of Equilibration Nitrogen Vapour on Post Thawing Semen Quality at Madura Bull Cattle
Hermin Ratnani and Suyadi 335

The Potential of Various feed Pellet to Weight Gain and Feed Conversion of Rex Rabbit (*Oryctolagus cuniculus*)
Nimas Ayu Pertiwi, Romziah Sidik, Dady Soegianto Nazar 345

Ideal Manajemen System for the Feasibility Ranch Purebred Cats (Cattery) In Surabaya, Sidoarjo and Gresik
Ratna Widyawati, Koesnoto Supranianondo, Bambang Sektiari L 348

Seroprevalence of Influenza Virus H5 Isolated from Mojosari Broiler Ducks (*Anas Javanicus*) Originated From Two Subdistricts in Jombang District East Java Province
A. P. Rahardjo, A. T. S. Estoepangestie, N. H. Risanti........ 355

Effect of Epigallocatechin-3-Gallate (Egcg) Content in The Green Tea as a Diet for Expression of *Transforming Growth Factor B* (Tgf-B), Impaired Folliculogenesis and Reproductive Status of Rats (*Rattus Norvegicus*)
Widjiati, Ika Wahyuni, Portia Sumarsono, Sruti Listra adrenalin, Christian Marco Hadi 362

Increased Neural and Glial Cells Death of Embryonic Cerebral Cortex Exposed to Carbofuran Insecticide in Prenatal Period
Epy Muhammad Luqman, Ari Gunawan, Harjanto, I Ketut Sudiana dan Widjiati 366

The Events of Helminthiasis in Digestive Tract of Pre and Post Weaning on Cattle in Lumajang Plateau Region
Ferri Andrianto, Setiawan Koesdarto, Nanik Sianita Widjaja 376

Comparisons of Nutritive Value Between Dairy Cow Milk and Yoghurt
Romziah S., Tri Bhawono D., Mirni L., Nenny H 382

The Blood Urea Nitrogen (BUN)And Creatininconcentration in Local Male Cats after Feeding by Dry Commercial Food
Lita Rakhma Yustinasari, Suryo Kuncorojakti 390

Potencial Test of Local Product PMSG (*Pregnant Mare Serum Gonadotropin*) Polyclonal Antibody (Abpo PMSH) Originated from Male Rabbit (*Orictolagus Cuniculus*) on Mice *(Mus Musculus*) Foetus Number
Indra Rahmawati 394

The Biopotency of PMSG (Pregnant Mare Serum Gonadotrophin) from Local Horse Toward Pregnancy Totally in Madura Cattle
Muharti Rahaju, Herry Agoes Hermadi, Fedik Abdul Rantam........ 401

The Use of Recycle Soybean Fermented Cake (Tempe) with Cellulolytic Bacteria From *Spodoptera litura* (Ulat Grayak) as Corn Substitution to Carcass and Abdominal Fat Percentage of Duck
Sri Hidanah and Dady Soegianto Nazar 406

Effect Of Non-Competitive Antagonist NMDA Receptors (N-methyl-D-aspartate), Ketamine, on NR2B Subunit Expression of NMDA Receptors In Neuropathic Pain Management
Indiastuti D.N, Setiawati Y., Khotib J 411

The Potency of Kelor Leaves (*Moringa oleifera*) for Treatment of Hypercholesterolemia in Mice (*Mus musculus*)
M. Gandul Atik Yuliani, M. Chalid Ardiansyah, Yuanistia Shally, Haydy Layli Orilina, Qurrota A'yuni, Nur Faidah 418

Bacteriocin Produced From Lactic Acid Bacteria as an Antibacteria and The Effect as Therapeutic of Dairy Cattle Sub Clinic Mastitis
Nenny Harijani 423

Exploration of Antibacteria From Lactic Acid Bacteria Againt to Escherichia Coli and The Effect to Therapeutical of Dairy Cattle Sub Clinic Mastitis
Hani Plumeriastuti 426

The Role of External Heat Shock Protein 70 (HSP70) Supplementation On Expression of Caspase 3 in Oocyte During Vitrification
Rimayanti 429

The Potency of Repetitive DNA Fragment for Molecular Diagnosis of Toxoplasmosis
Dyah Ayu OktavianieArdhiana Pratama, Sumartono and Wayan T. Artama 434

Molecular Analysis of a Variable Region on Protective Antigen Gene of Selected *Bacillus Anthracis* Isolates from Central Java And Yogyakarta Special Region
Maxs Urias Ebenhaizar Sanam, Widya Asmara, Agnesia Endang Tri Hastuti Wahyuni, Michael Haryadi Wibowo 441

Antibacterials Effect Of *Streptomyces* Sp-Mws1, *Streptomyces* Sp-Mws3, And *Streptomyces* Sp-Mws6 On Non Extended-Spectrum Β-Lactamase (Esbl)-Producing *Klebsiella Pneumoniae*
Yuani Setiawati, Danti Nur Indiastuti, Wiwin Retnowati........ 449

Relationship Management System Animal Hospital With Pattern Service Disease In Animal Hospital Surabaya
Miyayu Soneta Sofyan 457

Neutrophilia As a Spesific Clinical Sign to Differentiate Acute Cholangiohepatitis With Others Liver Inflammatory Diseases in Cat
Wiwik Misaco Yuniarti, Bambang Sektiari Lukiswanto 465

Effect of Transport on Glucose in Sheep
Sarmin, Amelia Hana, P udji Astuti, Yuda.Heru Fibrianto, Claude Mona Airin 471

ACROSIN HALF-BREED ETAWA GOAT (PE) SPERM CHARACTERISTIC TO INCREASE SPERMATOZOA QUALITY

Budi Utomo
Faculty of Veterinary Medicine Airlangga University

ABSTRACT

The development of cattle population in Indonesia has not reached in happy condition, even in east Java in the 2001 was decreasing population of some cattle, such as goat 3,24 %, cow 5,86% and buffalo 5% whereas other cattle have increased far from our hope. (Anonymous, 2007). The obstacle which is faced in the cattle breeding field is involving reproduction field, the priority fertilization problem includes failure sperm cell to penetrate zone pellucid on egg cell due to less enzyme acrosin potency and this is the first factor which hampers class cattle reproduction. Focus on the problem mentioned, so the short aim of this research is to get specific identify protein from acrosin that is in the acrosom goat spermatozoa and to isolate specific protein from acrosin as the bioactive material to make better cattle fertility. As for the further aim of this research is to get supplying specific protein from acrosin as the commercial way as well as to make better cattle fertility by making better its class reproduction. This research is laboratorial experiment, it is done by biological potential test from acrosin with spermatozoa medium without acrosin and spermatozoa + acrosin. The investigation of biological potential test including: motility percent, viability, abnormality, capacity, non-capacity and acrosom reaction. The investigation is divided into 2 incubation times, they are 30 minutes and 60 minutes. The result are: acrosin supplementation 4,5 µgram can increase motility goat PE's spermatozoa. Acrosin supplementation 3,0 and 4,5 µgram can increase viability, capacity and spermatozoa goat acrosom reaction PE. The conclusion are: acrosin supplementation (addition) with dosage 4,5 µgram can be used to increase biological goat PE potency, so it can be used as alternative (bioactive) material to make better cattle goat fertility.
Key words: Acrosin, Bioactive Material, and Biological Potency.

INTRODUCTION

Acrosin is protease enzyme found on akrosomal sperm and has vital importance for fertilization process. Acrosin is spent during acrosome reaction, this shown with attachment of spermatozoa to zone pellucid ovum or penetration of spermatozoa into pellucid zone. Low rate from acrosin will cause infertility and subfertilitity at livestock. From research which have former done indicate that the amount of acrosin has positive correlations with the numbers of occurence of in-vitro fertilizations. Low rate acrosin at spermatozoa cause failure of penetration at egg cell (Adel A. Zalata, et al. 2004). Activity from acrosin at spermatozoa from a semen visible based on concentration of sperm, motility percentage and also sperm morphology and character.

This enzyme (acrosin) is trypsin-like serine proteinase which at spermatozoa acrosome. It is an important proteolytic enzyme available for pellucid zone hydrolysis from ovum and very vital in the process of fertilization and also have an effect on to acrosome reaction. Acrosin formed by serine proteinase from spermatozoa acrosome and involved in is acrosome reaction in spermatozoa capacities for penetrating into pellucid zone (Williams, RM, JK Graham and RHODIUM Hammerstedt. 2001). Many evidences that acrosin are important for fertilizations process (Goodpasture JC; KL.Polakoski; JD. Zaneveld. 2000).

At frozen semen (sperm) for marrying injection (artificial insemination) at cow or goat, where too old storage and less controlled temperature, will influence the quality of frozen sperm. This thing is because

activity from acrosin enzyme will become decreased. On that account in this research will be done measurement of acrosin rate at frozen sperm with seeing the biological potency, cover sperm motility test, viability, fully plasma membrane, fully acrosome cap, capacitation, acrosome reaction, and also penetrability to zone pellucid (ZP).

MATERIAL AND METHOD

This research is to know the role of acrosin at halfblooded etawa goat spermatozoa to motility percenttage, viability, membrane integrity, capacitation, and spermatozoa acrosome reaction. Material which applied is acrosin isolate from halfblooded etawa goat spermatozoa elusion result from research of phase I, semen goat which accomodated from halfblooded etawa goat (counted 10 tail) in healthy condition and have high libido, condensation hipoosmotik 0,032 M (7,35 g Sodium citrate of 2H20, 13,52 g fructose which dissolved into 1 litre aquades), formalin, eosin negrosin, NaCl 3%, NaCl is physiological, coloration of Chlortetracyclin (CTC CTC, Fixative, DABCO, trichloroacetic acid of 20%, HCl 1N, Sodium thiobarbiturat 1%).

Appliance which applied is scale tube, sentrifuge tube, sentrifuge tools, object glass, [cover/conclusion] glass, microscope, incubator, contrast phase microscope, fluoresencece microscope, spectrophotometer. Semen from male goat accomodated by using made vagina in which provided with is scale receiver glass tube. Made vagina were prepared with installing both receiver appliance and shroud which have been sterilized, while room between external and internal shrouds filled with water which heated until temperatures of 45°C with a purpose to giving temperature to shrouds in equal to 42-43°C and one-third frontages camouflaging in vaginas made is nubed with vaselin. Here in after male goat given by excitement by female of angler then done relocation of semen. Soon after relocation, semen brought to laboratory for checked.

Inspection of fresh semen quality and inspection of semen after disuplementation with acrosin

Inspection of fresh semen quality was done as soon as possible after relocation. Inspection of fresh semen quality consisted of inspection of macroscopic and microscopic, that is : volume, colour, consistency, hydrogen ion exponent, motility, viability, abnormalitity, capacitation status and membrane integrity. Inspection of spermatozoa after disuplementation with acrosin including : motility, viability, abnormalitity, capacitation status and membrane integrity.

Inspection of makroskopis :

Volume : Volume of semen directly knowable from semen which seen at scale receiver tube. **Colour** : Visible semen colour directly momentary after relocation. **Consistency** : Consistency of viscosity checked by shaking down containing tube semening inch by inch and at the same time see surface mobility semening in tube. If friction of semen in the movement tube was interpreted tardy as semen having viscid consistency, while if the movement was quickly interpreted semen having watery consistency. **Degree of acidity (hydrogen ion exponent)** : Measurement of semen hydrogen ion exponent done by dripping semen by using ose at indicator hydrogen ion exponent paper. Discoloration at indicator hydrogen ion exponent paper reconciled with hydrogen ion exponents standards colours.

Microscopic Inspection cover :

Individual motility : Indivudual motility of spermatozoa is observed soon after done relocation of semen. Observation done by using magnifycation light microscope of 10 x 40 expanded at as endue thin semen above object glass. **Mass motility** : Mass motility is observed less than 10 minute after semen accomodated with light microscope of 10 x 10 expanded.

Concentration : Examination of semen hypothesis used spectrophotometer. The process is as follows : NaCl 3% taken with micropipette or scorex counted 3,98 ml and packed into cuvet tube which have been filled by 0,02 ml semen then homoginated with thermomixer.

Spermatozoa abnormalitity and viability : Viability observation (% of alive spermatozoa) and spermatozoa abnormalitity done by using coloration of differentiation that is making comment preparat which coloured with eosin-negrosin.

Integrity membrane spermatozoa by using condensation HOS test : Spermatozoa membrane integrity tested with condensation hypoosmotic swelling test (HOS tested). Counted 100μ semen levator skapula mixed with 1 ml condensation hipoosmotik (0,49 g citrate sodium x 2H2O and 0,9 fructose in 100 ml aquades). Those condensation incubated at temperature 37°C for 30 minutes. Spermatozoa membrane observed with light microscope of 400 times expanded ; to the distension of spermatozoa and existence of rolled tail (Fonseca, et al., 2005; Light, et al., 2005).

Capacitasy Spermatozoa Status : Examination of capacitation status (capacitation, acrosome reaction and non capacitation), good fresh semen and also semen treatment done with coloration of Chlortetracycline (CTC Staining). Observation with epifluourescence microscope (Nikon Microscope OPTIPHOT-2 apply filter-UV2A consisting of excitation filter EX330-3, dichonic mirror DM400 and Barrier filter BA435) using ultraviolet light source (Sumitro and ethic, 1998).

Acrosome Status at Spermatozoa : Spermatozoa fixation by 4% formaldehyde, then cleaned by adding PBS 3 ml and sentrifuged 1500 rpm for 10 minutes, supernatant thrown and added by 0,3 ml FITC con A (Sigma) with concentration of 10μ g/ml in PBS dulbeccos. Observation shown: (a) spermatozoa with acrosome intak, and (b) spermatozoa without acrosome. This method is researcher modification result from method before all (Ethic, 2000) from Nishikima method (1997).

RESULT AND DISCUSSION

Semen taken as research sample for acrosin disuplementation have criteria as competent semen to be weared as artificial insemination at goat, that is white milk chromatic and a little bit of cream brass colour, hydrogen ion exponent of 6-7, mass motility of 2+ - 3+, spermatozoa individual motility ≥ 70% (Zenichiro, et al., 2002). Out of 10 PE male goats which the semen was taken by made vagina in the result is as described at Tables of 1.

Tables of 1. indicate that mean of fresh volume percentage from this research result is 1,12 ± 0,25 ml, much the same to with obtained by Garner and Hafez (2000) that volume of goat semen in tropical area. Ranging from 0,8 - 1,2 ml. Jainudeen, et al., (2000) express that semen volume and amount of spermatozoa which yielded from every ejaculations influenced by specieses, age, season, area, ejaculation frequency, condition of health and food.

Goat semen colour generally white milk chromatic and a little bit krem brass colour. Various of this brass colour relate to existence of contents of riboflafin which yielded from gland secretion vesicula seminalis (Lindsay, et al., 1982; Evans and Maxwell, 1987).

Research result of spermatozoa consistency generally condensed. visually progressively condensed semen shown concentration of spermatozoa in excellent semen (Mcdonald and Pineda, 1989).

Table 1. Characteristic Fresh Semen Half-Breed Etawa Goat (PE)

Parameter	Mean ± SD
Colour	Milk white
Consistensi	Solut
Ph	6,56 ± 0,25
Volum (ml)	1,12 ± 0,25
Concentration (10^6)	2326,91 ± 106,14
Motility Mass	$2^+ - 3^+$
Motility Indiv (%)	75,56 ± 2,96
Viability (%)	92,50 ± 3,67
Abnormality (%)	5,56 ± 2,40
Integrity Membrane (%)	65,89 ± 7,22
Status Capasitation:	
- Status Capasitation (%)	57,55 ± 4,22
- Capasitation (%)	24,42 ± 8,97
- Reaction of Acrosome (%)	18,34 ± 5,75

Concentration of spermatozoa which obtained from this research is 2326,91 ± 106,14 x 106 spz/ml. Mean percentage concentration of this pertained is normal. Garner and Hafez (2000) express that concentration of goat spermatozoza ranging from 2.000 - 3.000 x 106 spz/ml. Devendra and Burns (1994) express that concentration of fresh semen goat per ejaculate ranging from 1,8 - 4 x 10 106 spz/ml. Degree of acidity (hydrogen ion exponent) share to determine status of life of spermatozoa in semen. Mean of fresh semen goat hydrogen ion exponent which obtained from this research is 6,56 ± 0,14. The pH value stay a few under normal hydrogen ion exponents, as said by Garner and Hafez (2000) that goat have hydrogen ion exponent ranging from 5,9 - 7,3.

The mean PE goat spermatozoa motility percentage from this research is 75,56 ± 2,96 %. This show is higher compared to the spermatozoa motility reported by Tambing, dkk. (2000) that goat spermatozoa motility FE is 74,29 ± 2,70%%,, however a few lower than which reported by Wicaksono (1999) that goat spermatozoa motility is 87,88± 2,61 %. Motility is valuation of quality of which in character subjectif because based on decision of examiner individual (Bearden and Fuquay, 1997). The good spermatozoa motility is seen from mass motion form thick cloud and the moving is progressive of active individual forwards (Ethic, 2007).

The mean of goat spermatozoa membrane integrity percentage from this research is 65,89 ± 7,22 %. This result is compared lower which reported by Isnaini (2006) that PE goat membrane integrity is 72,33 ± 3,66 %. Degradation of quality of spermatozoa can happened because biological factor and also because factor influence prosesing semen.

Result of research of capacitation, acrosome reaction and non fresh semen spermatozoa capacitation each is 23.42 ± 8,97%%,, 18,34 ± 5,75 % and 57,55± 4,22 %. This result are a bit better from which reported by Zamanti (2003) that capasitation is 24,25 ± 0,10%%,, acrosome reaction that is 11,83 ± 0,14 % and non capacitation that is 64,23 ± 0,21. Contents of fructose in goat semen that is 250 mg/100 ml, lower than cow semen that is 460 - 600 mg/100 ml (Garner and Hafez, 2000). Yanagimachi (1994) express that forest pig and goat only require time of 1 until 2 hour(clock for reaching optimal spermatozoa capacitation).

Tables of 2. Influence Suplementation Acrosin and Long of Incubation to Motility of PE Goat Spermatozoa

Doses acrosin (µ gr)	Long Incubation (minute)	Mean Motility of Goat Spermatozoa (%)
0	30	67,10 ± 5,29[a]
	60	65,34 ± 7,65[a]
3,0	30	67,81 ± 4,19[a]
	60	68,18 ± 4,81[a]
4,5	30	68,90 ± 8,59[b]
	60	70,20 ± 6,34[b]
6,0	30	53,50 ± 9,81[c]
	60	55,12 ± 6,26[c]

description : Different notation at same column, showing to differ in reality (p)

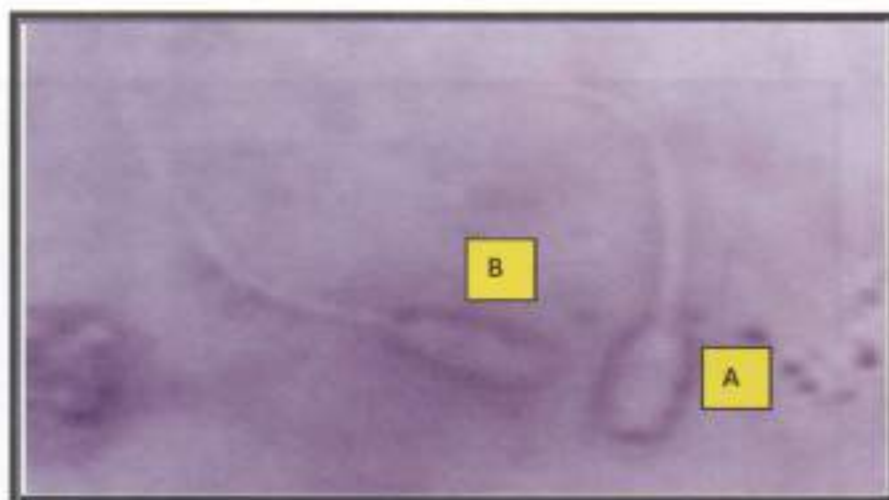
Characteristic of difference of influence acrosin suplementation and a long time of incubation continued with Reality distance test Duncan (JND) result indicate that treatment without acrosin and treatment with acrosin 3,0µ gram at various level incubations strippers shown to have an effect on not be real (p>0,05) to mean of goat spermatozoa motility percentage PE to mean of goat spermatozoa motility percentage analysis . While treatment with concentration of acrosin 4,5 and 6,0µ gram at various incubations shown to have an effect on reality (p) to mean of PE goat spermatozoa motility percentage. Biologically that treatment of acrosin 4,5µ gram resulting higher mean of goat spermatozoa motility percentage from other treatment. This is because addition of acrosin can reduce forming of lactic acid in cell causing at increasing of hydrogen ion exponent, causing metabolic process become to increase, and cause increasing of forming of ATP, so that will increase spermatozoa motility (Jones, et al., 1992; Garner and Hafez, 2000; Rigau, et al., 2002; Ford, 2006).

Spermatozoa living have membrane which intak (Draw 3), cause eosin dye negrosin have no admission pass membrane. Membrane function to protect organ in cell and as filter at surface of intraseluler and ekstraseluler. Died spermatozoa (draw 4.2B) show the plasma membrane destroyed. This situation cause cell metabolism process annoyed and membrane permeability become very high so that eosin dye negrosin can pass membrane and cause on fatal for spermatozoa (Saili, 1999).

Tables of 3. Influence Suplementation Acrosin and Long of incubation to Viability of PE Goat Spermatozoa

Dosis Acrosin (µ gr)	Long Incubation (minute)	Mean Viability of Goat Spermatozoa (%)
0	30	82,19 ± 4,64[a]
	60	78,60 ± 3,45[a]
3,0	30	87,20 ± 2,79[b]
	60	85,48 ± 4,76[b]
4,5	30	85,23 ± 3,89[b]
	60	83,20 ± 6,34[b]
6,0	30	76,50 ± 9,81[c]
	60	74,12 ± 6,26[c]

description : Different notation at same column, showing to differ in reality (p)



Draw 1. Result observation of goat spermatozoa viability PE by light microscope, description : A. spermatozoa lived (transparent) and B. dead spermatozoa (purple)

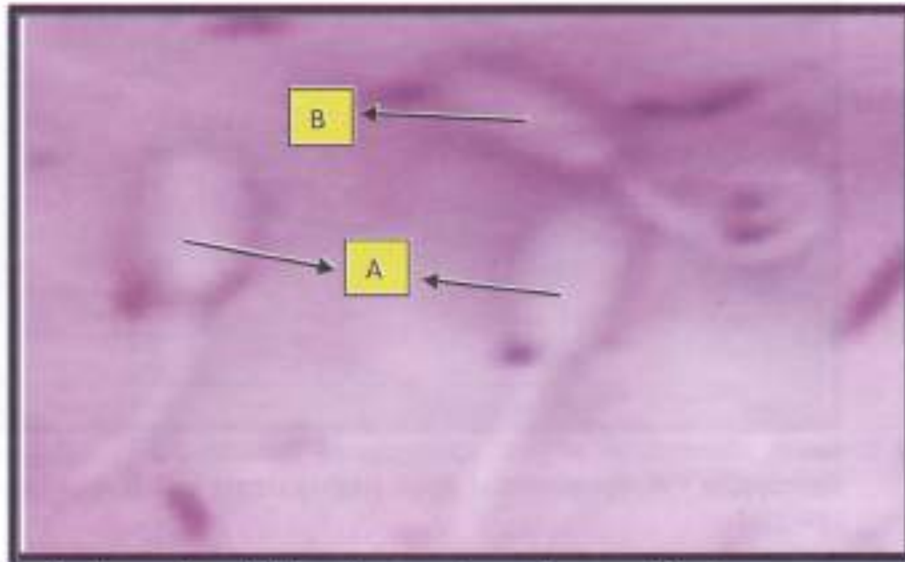
Analysis result indicate that treatment without acrosin suplementation and treatment with acrosin suplementation 3,0; 4,5 and 6,0µ gram at incubation have an effect on not be real ($p>0,05$) to mean of PE goat spermatozoa viability percentage. Biologically indicate that treatment of acrosin suplementation 3,0µ gram at various incubations resulting mean of PE goats spermatozoa's viabilities percentages better from other treatment. This indicating that acrosin suplementation up to 4,5µ gram in goat semen PE still give better effect to life of spermatozoa. acrosin suplementation 6,0µ gram have shown degradation of mean PE goat spermatozoa viability percentage. This is anticipated to relating of forming of lactic acid (Hafez, 2000).

During incubation, spermatozoa experienced changed of membrane compiler molecule causing membrane destabilisation which can reduce physiological function of membrane. Bearden and Fuquay (1997) express that activity metabolic semen became maximum if diluted with isotonic diluent, however if diluent had the character of hypertonic or hypotonic will reduce speed of metabolism but will not increase the life spermatozoa.

Tables of 4. Influence Acrosin Suplementation and long of incubation to Abnormality of PE Goat Spermatozoa

Doses acrosin (µ gr)	Long Incubation (minute)	Mean Abnormality of Goat Spermatozoa (%)
0	30	$7,40 \pm 3,76^{a}$
	60	$8,87 \pm 2,49^{a}$
3,0	30	$6,44 \pm 2,19^{a}$
	60	$7,38 \pm 2,09^{a}$
4,5	30	$8,23 \pm 3,30^{a}$
	60	$9,44 \pm 2,36^{b}$
6,0	30	$8,87 \pm 2,45^{a}$
	60	$9,96 \pm 1,67^{b}$

description : Different notation at same column, showing to differ in reality (p)



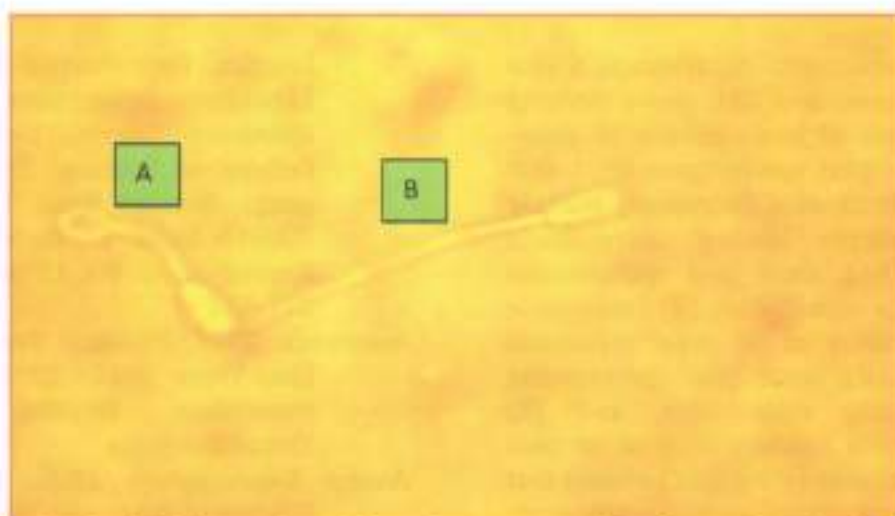
Draw 2. Result observation of PE goat spermatozoa abnormalitity by light microscope phase contras, description : A. Spermatozoa fully (all part of perfect spermatozoa body and chromatic transparent) and B. abnormal spermatozoa (part of body is not normal with imperfect tail formation

Result observation of PE goat spermatozoa abnormalitity with coloration of eosin negrosin observable at microscope phase contras of 1000 times expanded at picture of 2. Analysis result indicate that treatment without acrosin suplementation and treatment with acrosin suplementation dose of 6,0μ gram at various incubations have an effect on not be real (p>0,05) to mean of PE goat spermatozoa abnormalitity percentage, while acrosin suplementation dose of 3,0 and 4,5μ gram at various incubations strippers have an effect on reality (p) to mean of PE goat spermatozoa abnormalitity percentage. The mean of PE goat abnormalitity percentage which obtained from this research less than 10. This indicate that process of handling of semen from relocation until done by suplementation technically have been put accross, so that secondary abnormalitity can be depressed as low as possibly.

Tables of 5. Influence of Acrosin Suplementanio and long of incubation to Integrity of PE goat Spermatozoa Membrane

Doses Acrosin (μ gr)	Long Incubation (minute)	Mean of Integrity Membrane of Goat Spermatozoa (%)
0	30	46,40 ± 5,76[a]
	60	45,87 ± 4,49[a]
3,0	30	46,44 ± 4,19[a]
	60	46,38 ± 5,09[a]
4,5	30	45,23 ± 3,30[a]
	60	45,44 ± 2,36[a]
6,0	30	45,87 ± 2,45[a]
	60	44,96 ± 1,67[a]

description : Different notation at same column, showing to differ in reality (p)

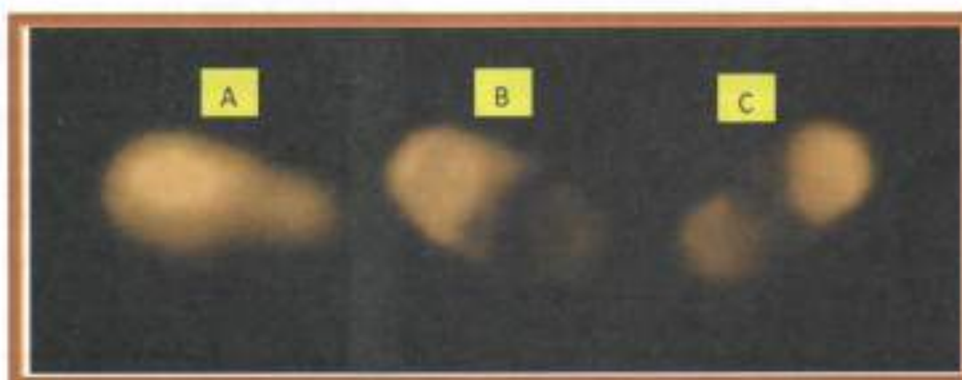


Draw 3. Result Observation of Goat Spermatozoa Membrane Integrity by Light Microscope Phase Contras, discription : A. spermatozoa with intake membrane (circle tail), and B. spermatozoa with demage membrane (tail straight). 400x

Tables of 6. Mean of PE goat Spermatozoa Capasitation Status Percentage after Acrosin Suplementation and long of incubation.

Perlakuan		Capasitation (%)	Reaction of Acrosom (%)	Non Capasitation (%)	Total (%)
Acrosin (µgram)	Incubation (minute)				
0	30	53,45±9,91^{a}	7,66±3,40^{a}	38,58±9,23^{a}	99,69
	60	61,64±10,46^{a}	5,61±2,08^{b}	32,75±9,19^{a}	99,90
3,0	30	61,91±11,60^{a}	9,17±4,55^{c}	27,71±4,08^{b}	98,79
	60	70,95 ±11,11^{b}	8,45±4,21^{c}	20,59±7,81^{b}	99,99
4,5	30	76,58±17,77^{b}	8,98±4,02^{c}	10,28±9,09^{c}	95,84
	60	80,92±9,39^{c}	11,56±4,03^{d}	7,52±7,65^{c}	100,00
6,0	30	53,71±15,56^{a}	4,40±1,02^{b}	41,87±5,05^{a}	99,98
	60	55,68±18,59^{a}	5,52±1,64^{b}	36,34±7,62^{a}	97,54
Mean					99,24

description : Different notation at same column, showing to differ in reality (p)



Draw 4. Result observation of goat spermatozoa capacitation status at thinning process with coloration of CTC with epiflourescence microscope (Bar =½ µ½ m), description : A. non kapasitasi, B. and capacitation C. acrosome reaction.

goat spermatozoa capacitation Status from coloration of CTC above showing three form of luminescence of flour-esence at goat spermatozoa head, that is (1) distribution fluoresence is same at membrane leading spermatozoa (draw 4.6A), show goat spermatozoa which non capacitation, (2) flouresence concentration of at area acrosomal (draw 4.6B), show goat spermatozoa experiencing capacitation, and (3) flourescence concentration of at post acrosomal area (draw 5.6C), shown that goat spermatozoa experiencing acro-some reaction. Result of luminescence of flouresence at goat spermatozoa (draw 4.6.) is image of distribution Ca^{2+} at spermatozoa head membrane, like have been reported by Mattiollli, et al (1996), Caul et al (1997) and ethic (2005).

CONCLUSION

Based on solution and result from this research is inferential as follows : Suplementation acrosin 4,5µ gram can increase PE goat spermatozoa motility, Suplementation acrosin 6,0µ gram can reduce PE goat spermatozoa motility. Suplementation acrosin 3,0 and 4,5 µ gram can increase viability, PE goat spermatozoa acrosome rea-ction and capacitation. Suplementation acrosin 3,0 and 4,5µ gram can reduce non PE goat spermatozoa capacitation. Suplementation (addition) acrosin with dose of 4,5µ gram applicable to increase biological potency of PE goat spermatozoa, so that usable as component of alternative (bioaktive) for repair of livestock fertility (goat).

REFERENCES

Adel A. Zalata, Ashraf H. Ahmed and Frank H. Comhaire.2004. Rela-tionship between acrosin activity of human spermatozoa and oxidative stress. Asian J. Androl. Dec., 6, 2004 : 313-318

Aditi Chatterjee, Sagarika Kanjilal and Asok K. Bhattacharyya.2000. Purification of human seminal acrosin inhibitor and its kinetics. Reproductive Biology Laboratory. Department of Bio chemistry, Calcutta University College of Science, 35, Bally gunge Circuler Road, Calcutta 700019 India. J. Biology of Reproduction. Vol 13 no 6 pp. 571-578

Anonimus. 2007. Populasi Ternak di Jawa Timur 2005 – 2007. Dinas Peternakan Pripinsi Jawa Timur. Surabaya.

Annop Kunavongkrit. 2005. Manual Practice of Biomoleculler. Facul-ty of Veterinary Science, Chula-longkorn University. Thailand.

Ax, R.L.; R.M. Baleato; E.A. McLaughlin; B. Nixon; M.R. Dally; B.A. Didion; B. Hafez and M.E. Belin. 2000. Semen Evaluation in Reproduction in Farm Animal. Hafez. B. And Hafez, E.S.E. 7th ed. Lippincott Williams and Wil-kins. Awollers Kltiwer Compa-ny. Philadelphia.

Baldi, E; L. Michael; B. Lorella; M. Monica and F. Gianni. 2000. In-tracelluler Event and Signaling Pathways Involved In Sperm Acquisition of Fertilizing Capa-city and Acrosom Reaction. Frontier in Bioscience. 5.110-123.

Bearden, H.J. and J.W. Fuquay. 1997. Applied Animal Reproduction. 4th ed. Prentice – Hall, Upper Saddle River, New Jersey.

Bergeron, A.; MH. Crete; Y. Bridle and P. Manjunath. 2004. Low Density Lipoprotein Fraction from Hen's Egg York Decreases the Binding of the Major of Bovine Seminal Plasma to Sperm and Prevents Lipid Efflux from the Sperm Membrane. Biol. Reprod. 70 : 708-717.

Chang; MR. Curry and PF. Watson. 2002. Sperm Structure and Function in Gamete the Sperma-tozoon. Cambridge Reviews in Human Reproduction. Ed. J.G. Gruzinkas & J.L. Yovich, Cam-bridge University Press.

Chen, Y.; M.J. Cann; T.N. Litvin; V. Lourgenko; M.L. Sinclair; R.L. Levin and J. Buck. 1999. Progesterone Induced Acrosome Reaction in Stallion Spermatozoa is Mediated by a Plasma Membrane Progesterone Reseptor. Biol. Reprod. 59: 733-742.

Darnell. J., H. Lodish., and D. Baltimore. 1990. *Moleculer Cell Biology*. 2nd Eddition. Sci. Am. Books:141-52.

Donald's, Mc. 2003. Veterinary Endocrinology and Reproduction. Fifth Edition. Edited by : Maurico H Pineda, Mi chael Dooley. Pp 154 – 225.

Edda Topfer Petersen. 1999. Carbohydrate based interactions on the route of a spermatozoon to fertilization. Institute of Reproductive Medicine, Veterinary School of Hanover, Germany. J. Human Reproduction Update. 1999. Vol 5 no4, pp 314 -329.

Evans, G.; and WMC. Maxwell. 1987. Salomon's Artificial Insemination of Sheep and Goat. Butterworth, Sidney.

Evans, W.H. and J.M. Graham. 1989. Membrane Structure and Function . IRL Press. Oxford University. Oxford : 11-28.

Flesch. F.M., and B.M., Gadella. 2000. Dynamics of the Mammalian Sperm Plasma Membrane in The Process of Fertilization. *Biochim Biophys Acta*. 1469: 197-235.

Ford, W.C.L. 2006. Glycolysis and Sperm Motility; does a Spoontul of Sugar Help the Flagellum go Round. Human Reprod. 12 (3) : 269-274.

Garner and Hafez, ESE. 2000. Reproduction in Farm Animals. 7th. Edition. Philadelphia, Baltimore, New York, London.

Gilbert, S.F. 1998. Developmental Biology, 2 nd ed. Sinauer Association, Inc Publisher, Sunderland, Massachusetts. P.313-330.

Goodpasture JC., KL Polakoski and JD Zaneveld .2000. Acrosin, Proacrosin and Acrosin Inhibitor of human sper matozoa. Department of Physiology and Biophysics, University of Illinois. USA.American Society of Andrology, Vol1 (3): 16-27.

Grudzinskas J.G. and J.L. Yovich. 1995. Gametes The Spermatozoa. Cambridge University Press.

Hafez, E.S.E. 2000. Asisted Reproductive Technology : Ovulation Manipulation, In Vitro Fertilization / Embryo Transfer (IVF/ ET) in Reproduction in Farm Animal. Hafez, B. and Hafez, E.S.E. 7th ed. Lippincott Williams and Wilkins. Awollers Kluwer Company. Philadelphia.

Hafez, E.S.E. 2002. Reproduction in Farm Animals. Lea and Febiger. Philadelphia. USA. Pp 260-282.

Hallap, JP. 2005. Mechanism and Control of Animal Fertilization. Academic Press. New Jersey.

Harrison, R.A.P. and B.M. Gadella, 2002. Capacitation Induces Cyclic Adenosine 3',5' Monophosphat-Dependent, but Apoptosis-Unrelated, Exposure of Aminophospholipids at the Apical Head Plasma Membrane of Boar Sperm Cells. 67 : 340-350.

Higgins, J.E. and A.P.Klinbaun, 1985. Design Methodology For Randomized Clinical Trial With an Emphasis on Contraseptive Research. Family Health International.

Isnaini. N. 2006. Peran Trehalosa dalam Pendinginan dan Pembekuan Semen kambing Boar. Disertasi. Program Pascasarjana. Unibraw Malang.

Jainudeen, M.R. and E.S.E. Hafez. 2000. Sheep and Goats in Reproduction in Farm Animal. Hafez, B. and Hafez, E.S.E. 7th ed. Lippincott Williams and Wilkins. Awollers Kluwer Company. Philadelphia.

Jones, G.A.; AG. Sacco and MG. Subramania. 1992. Histology of

Female Rabbit Immunized with Deglycosylate Zona Pellucida Macromolleculer of Pig. J. Reprod. Fert. 95 : 513-525.

Kaul. G.; S. Singhs; K.K. Gandhi and S.R. Anand. 1997. Calcium Requirements and Time Course of Capacitation of Goat Spermatozoa Assested by Clourtetra cycline Assay. J. Androl. 29(5): 243-251.

Liberda J.; M. Kraus; H. Ryslava; V. Vlasakova; V. Jonakova and M. Ticha. 2001. D-Fructosa Binding Proteins in Bull Seminal Plasma, Isolation and Characterization of Biochemistry. Charles University. Czech Republic.

Lindsay, D.R.; KW. Entwistle and A. Winantea. 1982. Reproduksi Ternak di Indonesia. Fakultas Peternakan dan Perikanan. Unibraw Malang.

Mc.Donald, I.E. and MH. Pineda. 1989. Veterinary Endocrinology and Reproduction. Lea and Febiger. Philadelphia.

Macpherson, ML., et al. 2002. Acrosin and Pro-acrosin Binding Protein 2 and 5 Goat Seminal Plasma. Association with Sperm Characteristics and Fertility. Biology Reproduction. 67 : 648-654.

Mattioli, M.; B. Barboni; F. Lucini and E, Seren. 1996. Identification of Capacitation in Boar Spermatozoa by Chlortetracycline Staining. Theriog 4: 331-373.

Maxwell, W.M.C. and P.F. Watson 1996. Recent Progres in Preservation of Ram Semen. Animal Reproduction Science. 42: 231-240

Mori, K.; T.Daiton; M. Kumada; M. Maeda; M. Maegawa and K. Hirano. 1993. European Society of Human Reproduction and Embryology. Departement of Obstetrics and Gynecology. Shool of Medicine. University of Tokushima . Japan.

Nur, Z.; I. Dogan; U. Gunay and M.K. Soylu. 2005. Relationships between Sperm Membrane Integrity and other Semen Quality Characteristics of the Semen of Saanen Goat Bucks. Bull Vet Inst Pulawy. 49: 183-187.

Polakoski KL and Zaneveld LJD. 2000. Proteinase and protein inhibittor in andrology. .Human semen and fertility regulation in men. CV Mosby Company, St Louis London. P564.

Rosatti, M.I.; M.T. Beconi; and M. Cordoba. 2003. Proacrosin - acrosin activity in capacitated and acrosome reacted - sperm from cryopreserved bovine semen. School of Veterinary Sciences, University of Buenos Aires. Argentina. J. Biocell, 28 (3): 311-316. 2003

Rigau, T., M. Rivera, M.J. Palomo, J.M. Fernandez, T. Mogas, J. Ballester, J.J. Guinovart and J.E. Rodriguez. 2002. Differential Effects of Glucose and Fructose on Hexose Metabolism in Dog Spermatozoa. Reproduction. 123 : 579-591.

Said, S.; E.M. Kaiin; F. Afiani; M. Gunawan and B. Tappa. 2004. Pengaruh Metode dan Lama Thawing terhadap Kualitas Semen Beku Sapi PO. Pusat Penelitian Bioteknologi. LIPI.

Saili, T. 1999. Efektifitas Penggunaan Albumin sebagai Medium Separasi dalam upaya Mengubah Rasio Alamiah Spermatozoa Pembawa Kromosom X dan Y pada Sapi. Tesis. Program Pascasarjana. Institut Pertanian Bogor.

Salisbury, G.W dan N.L. Van Demark. 1996. Fisiologi Reproduksi dan Inseminasi Buatan Pada Sapi. Gajah Mada University Press. 269-371.

Sarantina, 2006. Analisa Beberapa Parameter Motilitas Spermatozoa pada Berbagai Bangsa Sapi Menggunakan Computer Assisted Semen Analysis (CASA). Thesis Pascasarjana Unibraw. Malang.

Steel, RGD and H. Torrie. 1989. Principles and Procedures of Statistics. International Student Edition. McRaw-Hill Kogakusha, Ltd. Tokyo. Japan.

Suhana, Nana, Rafiah dan Siti R. 2002. Deferensiasi Embriologi Dalam Tingkat Seluler, Subseluler dan Molekuler. Penerbit FK Universitas Indonesia Jakarta. 374.

Sum, A.K.; R. Faller and J.J. de Pablo. 2003. Moleculer Simulation Study of Phospholipid Bilayer and Insights of the interactions with Disaccharides. J. Biophys. 85 : 2830-2844.

Suryadi; T.Susilawati dan N. Isnaini. 2004. Uji Coba Produksi Semen Beku Kerjasama Teknis antara Fapet Unibraw dan Proyek Pembinaan Peningkatan Produksi Peternakan, Malang.

Susilawati, T. 2003. Fisiologi Spermatozoa; Kapasitasi; Reaksi Akrosom dan Fertilisasi. Fakultas Peternakan Universitas Brawijaya. Malang.

Susilawati, T. 2007. Peran Insulin Like Growth Factor 1 Complex Plasma Seminalis Kambing Terhadap Potensi Biologis Spermatozoa Hasil Sentrifugasi. Program Pascasarjana Unair Surabaya.

Sumitro, SB.; dan T. Susilowati. 1998. Pedoman Penggunaan Mikroskop Multisistem dan Inverted. Laboratorium Biologi. Fakultas Matematika dan Ilmu Pengetahuan Alam. Unibraw Malang.

Toelihere, RM. 1993. Inseminasi Buatan Pada Ternak. Angkasa. Bandung

Tambing, SN.; MR. Toelihere; TL. Yusuf dan IK. Sutana. 2000. Pengaruh Gliserol dalam Pengencer Tris Terhadap Kualitas Semen Beku Kambing PE. Pusat Penelitian Peternakan. Badan Penelitian dan Pengembangan Pertani. Deptan. Jurnal Ilmu Ternak dan Veteriner. Vol. 5 no. 2.

Wabershi, A.C.; WC. Ford. 1994. The Role of Glucose in Supporting Motility and Capacitation in Human Spermatozoa. J.Androl. 6(4) : 22-32.

Wicaksono, L. 1999. Kapasitasi Spermatozoa Kambing Pada Keadaan Penghilangan Seminal Plasma dan Penambahan Seminal Plasma sapi. Thesis. Program Pascasarjana. Unibraw malang.

Williams, RM; JK. Graham and RH. Hammerstedt.2001. Determination of the- capacity of ram epididymal and ejaculated sperm to under go the acrosome reaction and penetrate ova. J. Biology of Reproduction. Biochemistry Program, Pennsylvania State University. vol 44 1080-1091.

Yanagimachi, R. 1994. Mammalian Fertilization in : The Physiology of Reproduction. Vol. 1. Raven Press. New York, NY, USA. V.1, 189-317.

Zamanti, D. 2003. Uji Reversibilitas Kapasitasi Spermatozoa Sapid an Kambing dengan Perbedaan Konsentrasi D-Fruktosa. Tesis Pascasarjana. Unibraw malang.

Zenichiro, K; Herliantin; Sarastina. 2002. Technology of Frozen Semen Processing for Cattle. Balai Inseminasi Buatan Singosari. Malang.

Zervos, IA; MP. Tsantarliotou; G. Vatzias; P Goulas and IA. Taitzoglou, 2005; Effects of dietary vitamin A intake on acrosin and plasminogenactivator activity of ram spermatozoa; *J. Reproduction and Fertility,* 129: 707-715 Nov.2005.