

PROCEEDING



international seminar

STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING ANIMAL HEALTH & PRODUCTIVITY TO SUPPORT PUBLIC HEALTH



Surabaya-Indonesia, 19-20 June 2012
JW Marriott Hotel Surabaya

EDITORS:

Michael P. Ward (Australia)
Faouzi Kechrid (Africa)
Montip Gettayacamin (Thailand)
Fedik Abdul Rantam (Indonesia)
Suzanita Utama (Indonesia)

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I-MHERE SUB-COMPONENT B.2.C PERFORMANCE BASED CONTRACT

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MESSAGES

PROF. DR. H. FASICH, APT.
Rector of Universitas Airlangga



International Seminar STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING THE ANIMAL HEALTH AND PRODUCTIVITY TO SUPPORT PUBLIC HEALTH

Assalamu'alaikum warahmatullahi wabarakatuh

Praised be to Allah SWT for His love and compassion that today we all gather for an important and interesting international seminar on healthy animal management system.

As we all aware, up to the present time, the world is still struggling to overcome various zoonotic diseases that have been threatening human being all over the world for centuries. Through the development of modern information and technology, we also know that those diseases weaken and decrease human quality of life sooner or later.

Therefore, concern over the problem is needed, especially in the region where people live below poverty line. As nothing can be expected from a nation with low quality of human life, it is about time for us to work hand-in hand to eradicate and prevent the outbreak of all kinds of diseases. Also, every human being is in need of good quality of domestic animals which provide plenty of protein for healthy people.

Time has come for all parties, including institutions of science to recognize the essential link between human, domestic animals and wildlife health, and the threat disease poses to people, their food supplies and economies, the biodiversity essential to maintaining the healthy environments and functioning the ecosystems.

I belief and hope that today's seminar will be able to strengthen our collaborations and networking, as an important step in reaching a safe and healthy life.

To all participants, I would like to thank you for making this seminar a success and the organizing committee for a wonderful work.

Thank you very much.

Wassalamu'alaikum warahmatullahi wabarakatuh.

MESSAGES

PROF. HJ. ROMZIAH SIDIK, PH.D., DVM.

Dean of the Faculty of Veterinary Medicine
Universitas Airlangga, Surabaya - Indonesia



Assalamu'alaikum warahmatullahi wabarakatuh

Dear Sir/Madam

On behalf of Organizing Committee the International Seminar entitled “STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING ANIMAL HEALTH AND PRODUCTIVITY TO SUPPORT PUBLIC HEALTH”, I would like to say thank you to the honorable: Rector Airlangga University, The Chairman of Academic Senate-Airlangga University, East Java Governor, Director General Animal Health and Husbandry-Indonesia, Chairman Bank Rakyat Malaysia, President of World Veterinary Association, President of Indonesian Veterinary School Association, President of Indonesian Veterinary Medicine School Association, Chairman of Animal Husbandry- East Java Province and Surabaya City. And also to all our special guest: The Dean VetAgro Sup Nationale Veterinary School of Lyon from France, The Chairman of Veterinary Public Health and Food Safety The University of Sydney Australia, Former Dean School of Animal and Veterinary Sciences – Faculty of Sciences The University of Adelaide Australia, Representatives Envoy School of Veterinary and Biomedical Sciences Murdoch University Australia, Former Dean Institute of Veterinary – Animal and Biomedical Science Colleges of Sciences Massey University, Regional Director for Southeast Asia, AAALAC International, Chairman of Animal BSL – 3 Airlangga University, and all best colleague the Deans of Veterinary Schools in Indonesia (Institute Pertanian Bogor, Gajah Mada University, Universitas Airlangga, Udayana University, Syahkuala University, Brawijaya University, HasanudinUniversity. University Nusa Cendana, University Wijayakusuma and University of Nusa Tenggara Barat), also the Deans comes from the other Faculty of Universitas Airlangga. I also would like to say thank you to the partnership Institutions and Industries, and I proudly to all the academic staffs and students and guest participants.

Welcome to the event in Surabaya, the city which located in East Java province. As one of Indonesia’s leading prefectural capital, Surabaya is keenly aware of the need to promote into a cosmopolitan city. East Java is settled between two world class tourist destinations, Jogjakarta and Bali. East Java, a province rich of tropical sights and cultural heritage is easily fitted to your journey from Jogjakarta to Bali. As natural lovers would expect an agritourism, the smoking volcano “Mt. Bromo” and the “G-Land” as a surfer paradise are the East Java’s breathtaking tourist attractions that should not be missed. East Java also have several National Park that protected bulls (*Bos javanicus*) and turtles (Chelonians), and the specific centre of commodities livestock, as a plan in the future will promote Timorensis deer as a potential meat animal product. For art lovers special dance, you can see the magical dance

of Reog Ponorogo. We are pleased to introduce you these tourism objects of splendid, scenic and cultural. The best to know this spectacular East Java is to come and see yourself.

I am very great pleasure for your attended to the International Seminar that hosted by Faculty of Veterinary Medicine, Airlangga University. It because of the God bless and love to us, therefore we could arranged the peach among Veterinary School in Asia region and in the World for Strengthen and Establishment, Benchmarking and branding our Veterinary School by global link.

Alhamdulillah robba'lamin, thank you so much for The God.

During these two days, the event programs include four main programs, such as plenary lectures, the scientific paper session, International Standardization Veterinary Scholl Curriculum base on OIE recommendation with possibly to arrange Twinning and Double Degree Study Program with France, New Zealand and Australia Veterinary School, and to construct Indonesian Veterinary Medicine Council supported by Indonesian Veterinary School Association and Stake Holders. We hope all of you could follow the programs by pleased, savor and it will be beneficial for us.

In this moment, I would like to say thank you to:

Chairman of Indonesia-Managing Higher Education Relevance and Efficiency (IM-HERE) Project-Sub Component B.2.c. Performance Based Contract for supporting and funding the International Seminar.

Rector of Universitas Airlangga for supporting and funding the International Seminar based on Annual Budgeting Plan 2012 of Airlangga University.

The sponsorships that supporting to the event.

All Keynote speakers and invited speakers.

All participants.

Finally, thank you very much for all the distinguish guest for your kindly and closely to all the participants, please have a nice time to enroll the event.

Thank you very much.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.



MESSAGES

DR. ANWAR MA'RUF, DVM., M.KES.

Chairman



Assalamu'alaikum warahmatullahi wabarakatuh

Ladies and Gentleman

I have the honour of welcoming, delegates and speakers to Surabaya and the 2012 International Seminar.

Organised under the theme "Strategy to Manage Bio-Eco-Health System for Stabilizing the Animal Health and Productivity to Support Public Health" this program was aimed to provide a forum for all those interested in sharing and discussing common concerns and up to date research in the physical, biological, social and economical changes that it happen in the environment which generates for human health.

It is only through exchange of information that we can carefully develop the strategic and medical intervention in managing bio eco health system to increase health and reproduction animal for supporting public health. So I hope you will take advantage of the many opportunities this program provides to network with colleagues from around Indonesia and overseas.

The successful organization of this program has required the dedication and time of all committee members. Much work went into preparing the program. I am very grateful for the financial support we have received from our sponsors which are recognized in this book. It would not be possible to hold this program without their support.

I do hope that the seminar will be fruitful for all of us and please enjoy your stay in Surabaya.

Thank you very much.

Wassalamu'alaikum warahmatullahi wabarakatuh.

CONTENTS

MESSAGES

RECTOR OF UNIVERSITAS AIRLANGGA	v
DEAN OF THE FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA.....	vii
CHAIRMAN	ix

INVITED SPEAKERS

INTERNATIONAL SEMINAR“STRATEGY TO MANAGE BIO ECO-HEALTH FOR STABILIZING THE ANIMAL HEALTH ANDPRODUCTIVITY TO SUPPORT PUBLIC HEALTH”	xxi
<i>Dr. Soekarwo, S.H., M.Hum.</i>	
MANAGEMENT OF BIO-ECO-HEALTH SYSTEM ON CONTROLLING ZONOTIC DISEASE AND ITS ROLEFOR INCREASING ANIMAL PRODUCTIVITY	xxxix
<i>Romziah Sidik</i>	
THE CHANGES OF INFECTIOUS AGENTS PROFILE AND DEVELOPMENT OF RESEARCH POLICY THROUGH A HEALTH CENTER AS A NATIONAL EMINENT.....	xxxvi
<i>Sam Soeharto</i>	
IMPACT OF VETERINARY EDUCATION ON THE STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING ANIMAL HEALTH TO SUPPORT PUBLIC HEALTH.....	xxxvii
<i>Stephane Martinot</i>	
FOOD SAFETY WITH EMPHASIS ON POULTRY PRODUCTION	xxxviii
<i>Syed Jalaludin Syed Salim</i>	
RISK ASSESSMENT: EMERGING ANIMAL DISEASES AS THEY RELATE TO FOOD SAFETY	xlili
<i>Michael P. Ward and Elizabeth M. Parker</i>	
AAALAC INTERNATIONAL ACCREDITATION PROCESS.....	xlix
<i>Montip Gettayacamin, D.V.M., DACLAM</i>	
PRESENTATION OF THE WORLD VETERINARY ASSOCIATION.....	liii
<i>Dr. Faouzi Kechrid</i>	
THE UTILIZATION OF MOLECULAR EPIDEMIOLOGY IN THE CONTROL OF EMERGING AND RE-EMERGING PARASITIC DISEASE	lxiii
<i>RC Andrew Thompson</i>	
SUMMARY STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING THE ANIMAL HEALTH AND PRODUCTIVITY TO SUPPORT PUBLIC HEALTH.....	lxviii
<i>Achmad Junaedi</i>	

PROFILE OF H5N1 SEED VACCINE FOR HUMAN DESIGNED BY UNIVERSITAS AIRLANGGA	lxix
<i>Dr. C.A. Nidom, M.S., DVM.</i>	
ANIMAL HEALTH AND PRODUCTION MANAGEMENT TO SUPPORT PUBLIC HEALTH	lxx
<i>Norman B. Williamson</i>	
PAIN ASSESSMENT AND MANAGEMENT IN ANIMALS	lxxiv
<i>Gail Anderson</i>	

FREE PAPER

OPTIMUM EQUILIBRATION TIME FOR THE SURVIVABILITY OF IN VITRO MATURED BOVINE OOCYTES FOLLOWING MDS TECHNIQUE OF VITRIFICATION.....	1
<i>Leah S. Guzman</i>	
BIOSECURITY AND BIOSAFETY MANAGEMENT ON VETERINARY HOSPITAL FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA.....	4
<i>Miyayu Soneta Sofyan</i>	
ISOLATION MICROBIAL PATHOGENS OF SUBCLINICAL MASTITIS FROM ETTAWAH CROSS BREED GOATS MILK IN SLEMAN, YOGYAKARTA	8
<i>A.E.T.H. Wahyuni, Fx. Satria Pinanditya, DVM</i>	
DETERMINATION EFFECT FROM RECURRENT RADIODIAGNOSTIC RADIATION: PRELIMINARY STUDY OF PERIPHERAL BLOOD CHARACTERISTIC ON SPLENECTOMIZED MICE (<i>MUS MUSCULUS</i>)	11
<i>Mokhamad Fakhrol Ulum, Deni Noviana, Sri Estuningsih, Tri Budiarti Nengsih, Yulia Fitriani, Adhi Mediesyah Ahmad, Trie Wiyata Lestary, Yanida Yusup Setiawan</i>	
PRELIMINARY STUDY OF TEMPOROMANDIBULAR JOINT DISORDER ON RABBIT THROUGH RADIOGRAPHIC APPROACH AS ANIMAL MODEL FOR HUMAN TRAUMATIC ANKYLOSIS (LOCK JAW) DISEASE.....	14
<i>Devi Paramitha, Mokhamad Fakhrol Ulum, Deni Noviana, R. Harry Soehartono, Endang Sjamsudin, Tri Budiarti Nengsih</i>	
B-MODE ULTRASOUND IMAGING OF FELINE EYES (<i>FELIS CATUS</i>)	17
<i>Mokhamad Fakhrol Ulum and Deni Noviana</i>	
COMPARATIVE STUDY ON ENDOSCOPIC IMAGING: ESOPHAGOSCOPY AND GASTROSCOPY OF UPPER DIGESTIVE SYSTEM BETWEEN DOGS (<i>CANIS LUPUS</i>) AND CATS (<i>FELIS CATUS</i>).....	21
<i>Gunanti, R Harry Soehartono, Deni Noviana, Dudung Abdullah, Rr Soesatyoratih, Budhy Jasa Widyananta, Mokhamad Fakhrol Ulum, Riki Siswandi</i>	
STOCKING DENSITY AND HAEMATOLOGICAL INDICES AND WELFARE OF GROWER RABBITS (<i>ORYCTOLAGUS CUNICULUS</i>) IN TROPICAL CLIMATE	24
<i>Joshua T.S.Y., Mutalib A. R., and Fuzina N.H.</i>	



PRODUCTION OF WHOLE SERUM PMSG (PREGNANT MARE SERUM GONADOTROPIN) WITH SEPADEX OF PREGNANT LOCAL MARE SERUM TO IMPROVE GESTATION AND NUMBER OF FAT TAILED SHEEP STRAIN IN SAPUDI ISLAND	27
<i>Herry Agoes Hermadi</i>	
EXPRESSION OF TOLL LIKE RECEPTOR ON RABBITS IMMUNIZED WITH ANTIGENIC PROTEINS OF SARCOPTES SCABIEI VAR.CAPRAE.....	32
<i>Nunuk Dyah Retno Lastuti</i>	
THE EFFECT OF THORACO-VAGOTOMIZED CALVES ON RUMEN DEVELOPMENT BY PGP 9.5 IMMUNOHISTOCHEMISTRY	35
<i>R. Harry Soehartono and Dwi Dian Vitasari</i>	
THE EFFECT OF BACTERIOCIN TO REDUCE THE NUMBER OF ESCHERICHIA COLI ISOLATED FROM BEEF SOULD AT ABATTOIR	39
<i>Nenny Harijani, Luviana Kristianingtyas, Hario Puntodewo, Soelih Estoepangestie</i>	
THE EFFECT OF BACTERIOCIN AS AN ANTIBACTERIA ON THE TOTAL BACTERIAL COUNT OF CHICKEN MEAT STORED AT 4° C	43
<i>Nenny Harijani, Dara Recardsari Casarus, Romziah Sidik</i>	
GROWTH ASPECTS OF BROILER AT AGE CONSTANT VS WEIGHT CONSTANT	48
<i>Andoyo Supriyantono</i>	
ULTRASONOGRAPHY INTERPRETATION OF LIVER ABNORMALITIES IN THE DOGS	52
<i>Deni Noviana, Budhy Jasa Widyananta, I Wayan Widi Parnayoga</i>	
SENSITIVITY ANALYSIS OF LAYER CHICKEN FARMS IN SUB-DISTRICT KEDUNGPRING LAMONGAN.....	56
<i>Sunaryo Hadi Warsito</i>	
PIG HUSBANDRY AND MANAGEMENT ADOPTED BY FARMERS AND THEIR IMPACTS TO CSF TRANSMISSION IN WEST TIMOR, INDONESIA	60
<i>Petrus Malo Bulu, Ian Robertson, Jenny-Anņ Toribio, Maria Geong</i>	
ANTIBACTERIAL SUSCEPTIBILITY OF BACILLUS SUBTILIS ISOLATED FROM SOIL AND FISHPOND SEDIMENT.....	64
<i>Erni Rosilawati Sabar Iman, Lina Susanti, Sri Subekti</i>	
HAEMOGREGARINE CASE IN PYTHON SNAKE.....	68
<i>Mufasirin</i>	
HISTOPATHOLOGY OF HEPATOCYTE NUCLEUS DEGENERATION EXPOSED BY CURCUMA AERUGINOSA	70
<i>Eka Pramytha Hestianah</i>	
CORRELATION ANALYSIS MODEL OF HEMATOLOGY EXAMINATION, INFLAMMATORY CELLS AND BLOOD CHEMICAL PROFILE OF KAMBING KACANG AT DESA MOJOSARIREJO DRIYOREJO GRESIK.....	73
<i>Hana Eliyani, Soeharsono, Retno Bijanti</i>	
PREVALENCE OF OBESITY AND RISK FACTORS IN DOGS IN SURABAYA	76
<i>Nusdianto Triakoso</i>	



VETERINARY ANTIBIOTICS IN ANIMAL PRODUCTION AND THE ENVIRONMENT	80
<i>Saleha A.A.</i>	
MICROBIOLOGICAL ANALYSIS OF DRINKING WATER AND SOYBEAN MILK	83
<i>Lucia R.W. Muslimin and FikaYulizaPurba</i>	
THE EFFECTS OF HYPERBARIC OXYGEN ON THE NUMBER OF EOSINOPHILS AND THE PICTURES OF SPLEEN WHITE PULP DIAMETERS IN WHITE RATS GIVEN HEAVY SWIMMING EXERCISES.....	86
<i>Setianingsih, H.</i>	
CORRELATION OF SERUM ALP ACTIVITY WITH THE HEALING PROCESS OF FEMORAL FRACTURES IN RATS USED CISSUS QUADRANGULARIS EXTRACT AS THERAPY	90
<i>Ira Sari Yudaniayanti, Lianny Nangoi, Julien Soepraptini</i>	
IMMUNOHISTOCHEMICAL ANALYSIS ON THE DISTRIBUTION OF ADENOHYPHYSIAL CELLS IN THE PITUITARY PARS DISTALIS OF THE OSTRICH (STRUTHIO CAMELUS)	94
<i>Dwi Kesuma Sari, Lucia Muslimin, Fika Yuliza Purba, I Ketut Mudite Adnyane, Kazuhide Adachi, Yasuhiro Tsukamoto</i>	
CORRELATION BETWEEN DURATION TIMES OF CRYOPROTECTANT TOWARD MICE EMBRYO DEVELOPMENT	96
<i>Bambang Poernomo S., Soeharsono, Trianto Nur Abdullah</i>	
DEVELOPMENT OF THE FIVE ELEMENTS MODEL ON INTERACTION LIVER AND KIDNEY FUNCTION THROUGH BLOOD AS MEDIATOR USING EQUALLY PARAMETER.....	100
<i>Soeharsono, RTS Adikara, E. Widjajanto, Bambang Poernomo S.</i>	
CHARACTERIZATION OF IMMUNOGLOBULIN Y AGAINST SOLUBLE PROTEIN OF <i>TOXOPLASMA GONDII</i>	104
<i>Lucia Tri Suwanti, Marek Yohana Kurniabudhi, Hani Plumeriastuti, Suwarno, Fedik Abdul Rantam</i>	
FROZEN SEMEN OF MERINO RAM PRODUCTION IN CENTRAL ARTIFICIAL INSEMINATION DISTRICT OF FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA FOR IMPROVEMENT POPULATION OF SHEEP IN EAST JAVA.....	107
<i>Abdul Samik, Herry Agoes Hermadi, Sri Pantja Madyawati, Trilas Sardjito</i>	
CHARACTERIZATION OF <i>BRUCELLA ABORTUS</i> VACCINE STRAIN S-19 AND LOCAL ISOLATE WITH CONVENTIONAL BACTERIOLOGY METHODS AND MULTIPLEX POLYMERASE CHAINS REACTION (PCR)	110
<i>Nunung Aji Wibowo, Didik Handijatno, Ratih Ratnasari</i>	
THE EFFECT OF EGGS YOLK SKIM AND EGG YOLK TRIS ON MOTILITY AND VIABILITY OF MERINO SHEEP SEMEN POST-THAWING.....	115
<i>Yossi Aris Munandar, Abdul Samik, Rudy Sukamto, Wurlina Meles</i>	
ARTIFICIAL INSEMINATION PROGRAM FOR BEEF CATTLE IN MADURA ISLAND “TARGETS, REALIZATION AND PROBLEMS”.....	118
<i>Mas’ud Hariadi</i>	



THE SPECIFICITY TEST OF H-Y POLYCLONAL ANTIBODY IN RABBITS WITH DOT BLOT METHOD.....	122
<i>Sri Pantja Madyawati, Nikmah Rahmawati, Husni Anwar, Pudji Sianto</i>	
PET CARE FOR REDUCING ZONOTIC DISEASES.....	126
<i>Aulanni'am, Manik Eirry Sawitri, Masdiana C. Padaga and E.F. Maryani</i>	
IDENTIFICATION OF ENDOPARASITES FROM FECAL SAMPLES OF PROBOSCIS MONKEYS (<i>NASALIS LARVATUS</i>) IN SURABAYA ZOO.....	128
<i>Setiawan Koesdarto, Ritria Palupi Ambangsari, Mas'ud Hariadi, Endang Suprihati</i>	
MORPHOSPESIES AND PHYLOGENETIC TREE ANALYSES OF LEUCOCYTOZON CAULLERYI FROM CHICKENS LEUCOCYTOZONOSIS CASES IN PASURUAN, EAST JAVA	131
<i>Endang Suprihati</i>	
BIOLOGICAL CHARACTERIZATION OF DENGUE VIRUS (DEN-3) INFECTION VERO CELL LINE AS CANDIDATE BACKBONE OF CHIMERA VACCINE DEVELOPMENT	136
<i>Deka Uli Fahrodi, Nur Saidah, Helen Susilowati, Eryk Hendrianto, Soegeng Soegijanto, Fedik A. Rantam</i>	
POTENCY OF VERY VIRULANCE IBDV - STRAIN NATURAL ISOLATE FROM COMMERCIALE FARM AS CANDIDATE CHALLENGE VIRUS.....	139
<i>Nur Saidah, Deka Uli Fahrodi, Melati Ayu Handayani, Rahayu Ernawati, Fedik A. Rantam</i>	
ANTI NECRO-INFLAMMATORY EFFECT OF STANDARDIZED PUNICA GRANATUM EXTRACT (40% ELLAGIC ACID) ON LIVER FIBROSIS INDUCED BY BILE DUCT LIGATION IN RATS	142
<i>Bambang Sektiari Lukiswanto and Wiwik Misaco Yuniarti</i>	
EFFECT OF RUMEN CONTENT FLOUR AND CHLORELLA AS FEED SUBSTITUTION FOR CORN ON BROILER PERFORMANCE.....	147
<i>Koesnoto Soepranianondo</i>	
THE ROLE OF OLEIC ACID IN COMPLETE FEED DAIRY COWS IN DECREASING LACTOSE AND INCREASING FAT MILK	150
<i>Tri Nurhajati., Romziah S., Mirni L., Herman S. and Retno S.W.</i>	
THE BACTERICIDAL EFFECT OF SINGAWALANG (<i>PETIVERIA ALLIACEAE</i>) LEAF EXTRACT ETHANOL AGAINST STRAIN H ₃₇ RV <i>MYCOBACTERIUM TUBERCULOSIS</i>	154
<i>Nurmawati Fatimah, Hasutji Endah Narumi</i>	
✓ THE EFFECTIVENESS OF CRYOPROTECTANT DURING THE SPERMATOZOA FREEZING PROCESS USING RAPID FREEZING METHOD ON THE FEATURES OF THE AMINO ACID SEQUENCES OF POSTTHAWING FROZEN BOVINE SEMEN	158
<i>Trilas Sardjito, Widjiati, Sri Pantja Madyawati</i>	
TOTAL LEUCOCYTES AND LYMPHOCYTES BLOOD COUNT IN BREAST CANCER MICE TREATED WITH ANTIOXIDANT OF KOMBUCHA TEA AND GREEN TEA.....	164
<i>Setiawati Sigit, Sruti Listra Adrenalin, Portia Sumarsono, Kevin Laveno Santos, Sugiarto Sinar</i>	



COMPARISONS OF NUTRITIVE VALUE BETWEEN DAIRY COW MILK AND YOGHURT.....	168
<i>Tri Bhawono D, Mirni L, Nenny H, Romziah S</i>	
PRODUCTION OF SEX PHEROMONES IN THE VARIANT OF HOUSEFLY <i>MUSCA DOMESTICA</i>	172
<i>Poedji Hastutiek</i>	
RICE STRAW QUALITY FERMENTED WITH CELLULASE ENZYME FROM <i>KLEBSIELLA SP.</i>	176
<i>Mohammad Anam Al-Arif, Win Darmanto, Ni Nyoman Tri Puspaningsih, Suwarno</i>	
THE BIOLOGICAL CHARACTERISTIC OF DENGUE TYPE 4 VIRUS IN VERO CELL	179
<i>Deya Karsari, Helen Susilowati, Eryk Hendrianto, Annas Prasetyo Adi, Purwati, Fedik. A. Rantam</i>	
CONSUMPTION AND DRY MATTER DIGESTIBILITY VALUE OF RUMINANTS COMPLETE FEED FOR SHEEP	182
<i>Herman Setyono, Romziah Sidik, Tri Nurhajati, Mirni Lamid, Retno Sri Wahyuni</i>	
CANINE HEMOBARTONELLOSIS.....	185
<i>Leni Maylina, Vici Eko Handayani, Didid Wahyu Jatmiko</i>	
✓ THE EFFECT OF <i>CISDIAMMINEDICHLOROPLATINUM (II)</i> TREATMENT ON DEVELOPMENT OF FOLLICLES RAT (<i>RATTUS NOVERGICUS</i>) OVARIES	190
<i>Alfina Hertiwirani, Pudji Srianto, Wurlina, Sri Pantja Madyawati and Widjiati</i>	
CHARACTERIZATION OF PROTEIN HAEMAGLUTININAVIAN INFLUENZA VIRUS SUBTYPE H5N1 BASED ON MOLECULAR WEIGHT.....	192
<i>Helmi Adhitya, Ernawati, R</i>	
IDENTIFICATION OF NEURAMINIDASE (NA) OF <i>AVIAN INFLUENZA</i> SUBTYPE H5N1 BASED ON MOLECULAR WEIGHT BY USING <i>WESTERN BLOT</i> METHODS.....	196
<i>Debora Ayu P, Ernawati, R</i>	
IN VITRO ANTIMALARIAL ACTIVITY OF JALOH LEAVES EXTRACT ON <i>PLASMODIUM FALCIPARUM</i>	200
<i>Nuzul Asmilia, Amalia Sutriana, Erdiansyah Rahmi, Sugito</i>	
ROLE OF FERTILITY ASSOCIATED ANTIGEN (FAA) RESULTS OF ELECTROELUTION SPERMATOOZOA MEMBRANE CATTLE OF VIABILITY AND MOTILITY SPERMATOOZOA AFTER FREEZING.....	203
<i>Tri Wahyu Suprayogi</i>	
POTENCY OF IMMUNOMODULATING ACTIVITIES INFUSA LEAF <i>PLECTRANTHUS SCUTELLAROIDES</i> ON HUMAN PBMCS CELLS IN VITRO	211
<i>Ulva Mohtar Lutfi, Almaedawati Erina, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S. Andi Jayawardhana, Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, SNR Anieka Rochmah, Fedik A. Rantam</i>	



STUDY OF IMMUNOMODULATING ACTIVITIES INFUSA LEAF <i>PIPER ADUNCUM</i> L ON HUMAN PBMCS CELLS IN VITRO.....	214
<i>Nailul Izzah, Ulva Mohtar Lutfi, Almaedawati Erina, Rizki Arya Pradikta, Febri Kusumaning E.S, Andi Jayawardhana, Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, SNR Anieka Rochmah, Fedik A. Rantam</i>	
EXPLORATION OF IMMUNOMODULATING ACTIVITIES INFUSA FLOWER <i>CHLOROPHYTUM COMOSUM VARIEGATUM</i> ON HUMAN PBMCS CELLS IN VITRO	217
<i>SNR Anieka Rochmah, Ulva Mohtar Lutfi, Almaedawati Erina, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S, Andi Jayawardhana, Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, Fedik A. Rantam</i>	
IMMUNOMODULATING ACTIVITIES OF INFUSA LEAF <i>CENTELLA ASIATICA</i> ON HUMAN PBMCS CELLS IN VITRO.....	220
<i>Almaedawati Erina, Ulva Mohtar Lutfi, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S, Andi Jayawardhana, Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, SNR Anieka Rochmah, Fedik A.</i>	
EARLY DETECTION OF SEX IN JALAK BALI (<i>LEUCOPSAR ROTHSCILDI</i>) BASED ON GENE ENCODING Z AND W SEX CHROMOSOME BY POLYMERASE CHAIN REACTION	223
<i>Eduardus Bimo A.H, Agus Sunarso</i>	
ISOLATION AND CHARACTERIZATION OF THE HEMAGGLUTININ PROTEIN OF <i>ESCHERICHIA COLI</i> PILI ISOLATED FROM THE SEMEN OF INFERTILE MAN.....	225
<i>Sukarjat</i>	
FERMENTATION WITH <i>ACTINOBACCILUS SP</i> ML-08 BACTERIA FOR DECREASING CELLULOSE OF CORN HUSK AS RUMINANTS FEED.....	232
<i>Mirni Lamid</i>	
EXPLORATION OF <i>PROTIUM JAVANICUM BURM</i> AS. IMMUNOSTIMULATOR IN VITRO ACTIVITIES THROUGH THE MEASUREMENT OF THE CAPACITY OF CELLS AND PHAGOCYTOSIS CAPACITY OF HUMAN PBMCS.....	235
<i>Andi Jayawardhana, Ulva Mohtar Lutfi, Almaedawati Erina, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S., Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, SNR Anieka Rochmah, Fedik A. Rantam</i>	
BIOACTIVITY OF INSULINE LIKE GROWTH FACTOR-1 (IGF-1) DERIVED FROM THE HEPATOCYTE MONOLAYER CULTURE AGAINST CLEAVAGE AND DEVELOPMENT OF BOVINE EMBRYO IN VITRO	238
<i>Sri Mulyati and Laba Mahaputra</i>	
DETECTION OF METHICILLIN-RESISTANT <i>STAPHYLOCOCCUS AUREUS</i> (MRSA) AND OTHER BETALACTAM-RESISTANT IN DOGS GIVEN ANTIBIOTICS FOR CHRONIC DERMATOLOGICAL DISORDERS	242
<i>Mustofa Helmi Effendi and Ristin Riwayanti</i>	



EARLY DETECTION OF ANTIBODY IN MOUSE SERUM AFTER INFECTED WITH TOXOCARA VITULORUM SECOND STAGE LARVAE (L2) BY USING ELISA TECHNIQUE	246
<i>Sri Mumpuni, Kusnoto and Agus Sunarso</i>	
CLOSED HOUSE METHOD ON BROILER FARMING FOR INCREASE EFFISIENCY AND PRODUCTION.....	248
<i>Wurlina, D.K. Meles and Herlina</i>	
PRODUCTION AND CHARACTERIZATION OF IMMUNOGLOBULIN Y AGAINST MEMBRANE ANTIGENS OF <i>TOXOPLASMA GONDII</i>	251
<i>Yuliana Praptiwi, Lucia Tri Suwanti, Suwarno</i>	
THE HEATH STATUS OF ETAWAH-CROSS(PE) NEONATES FOLLOWING ADMINISTRATIONOF VARIOUS COLOSTRUM	255
<i>Anita Esfandiari, Setyo Widodo, Sus Derthi Widhyari, I Wayan T Wibawan, Dondin Sajuthi, and I Ketut Utama</i>	
SURGICAL REMOVAL OF A PROVENTRICULUS FOREIGN BODY FROM OSTRICH (<i>STRUTHIO CAMELUS</i>): CASE REPORT.....	258
<i>Boedi Setiawan</i>	
REACTIVITY OF PROTEIN NEURAMINIDASE VIRUSAVIAN INFLUENZA SUBTYPE H5N1 LOCALISOLATE AGAINST ANTIBODY AFTER VACCINATION AS A CANDIDAT KIT DIAGNOSTIC.....	261
<i>Rahaju Ernawati</i>	
THE SURVIVAL OF CHITAL DEER IN THE NEW ENVIRONMENT.....	264
<i>Zulfikar Basrul, Muh. Aqshar M., Meyby Eka P.L, Rozana Pratiwi S., Noer Khalid Chaidir, Zainal,Ryan P, A. Aswan, Degi P, St. Mughniati, Khaidir Kafil</i>	
IMUNOSTIMULATORY EFFECT OF REMPANG LEAVES (<i>ARDISIA HUMILIS</i>) ON MACROPHAGE ACTIVITY AND PHAGOCYTOSIS CAPACITY OF HUMAN PBMCS	265
<i>Ahmad B. Arafat, Ulva Mohtar Lutfi, Almaedawati Erina, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S. Andi Jayawardhana, Dony Chrismanto, Aristika Dinar Yanti, Ernisa Chumaidah, Berny Julianto, SNR Anieka Rochmah, Fedik A. Rantam</i>	
ETHYLENE GLYCOL CRYOPROTECTANT CAN MAINTAIN VIABILITY OF POST-THAWED MICE EMBRYOS AFTER VITRIFICATION	269
<i>Widjiati, Erry Tri Sheliana A, Herry Agoes Hermadi, Hana Eliyani</i>	
EFFICACY AND HUMORAL IMMUNITY RESPONSE ORAL VACCINE SAG2, PARENTERAL VACCINE RABISIN, AND RABIVET SUPRA 92 AT THE KAMPUNG DOGS IN INDONESIA.....	275
<i>Faizah, A.A.G. Putra, I. N. M. Astawa, M, Suwarno, S.O. Helen</i>	
CHARACTERIZATION OF NUCLEOPROTEIN GENE RABIES VIRUS SULAWESI ISOLATES.....	279
<i>Riski Arya Pradikta and Suwarno</i>	
IDENTIFICATION OF PROTEIN RABIES VIRUS SULAWESI ISOLATES BY WESTERN BLOT METHODS	283
<i>Novy, Nurikha S and Suwarno</i>	



ANTIGENICITY OF NEURAMINIDASE (NA) OF AVIAN INFLUENZA VIRUS SUBTYPE H5N1 (LOCAL ISOLATE) AGAINST POLYCLONAL ANTIBODY OF AVIAN INFLUENZA VIRUS SUBTYPE H5N1, H5N2 AND H5N9 BY USING INDIRECT ELISA	287
<i>Febry Kusumaning E.S, Ernawati, R, Suwarno</i>	
PATHOMORPHOLOGIC CHANGES OF <i>LONCHURA PUNCTULATA</i> AFTER INFECTION WITH HIGHLY PATHOGENIC AVIAN INFLUENZA VIRUS (H5N1) OF ASIAN LINEAGE	290
<i>Djoko Legowo, E. Djoko Poetranto, Arimbi, Hani Plumeriastuti, Ajik Azmijah</i>	
LOCAL CLIMATE AND DENGUE HEMORRHAGIC FEVER INCIDENCE IN SURABAYA INDONESIA.....	293
<i>Ringga Fidayanto and Ririh Yudhastuti</i>	
ANALYSIS OF ENVIRONMENTAL FACTORS ON THE INCIDENCE OF LEPTOSPIROSIS IN SURABAYA AND ITS SURROUNDING	294
<i>Avia Putrianti Martha, Silfi Tiffani, and RirihYudhastuti</i>	
<i>CALAMUS ROTANG</i> AS IMMUNOSTIMULATOR EXPLORATION IN VITRO BY MEASURING THE ACTIVITY OF MACROPHAGES AND PHAGOCYtic CAPACITY OF HUMAN PBMCS.....	295
<i>Dony Chrismanto Andi Jayawardhana, Ulva Mukhtar Lutfi, Almaedawati Erina, Nayla Putri Suherman, Ahmad Brilyan Arafat, Ernisa Chumaidah, Risti, Bernie Julianto, Anieka Rohmah, Dygta, Febri, Fedik A. Rantam</i>	
THE EFFECT OF COMPLETE FEED ON THE HEMICELLULOSES DIGESTIBILITY AND DIGESTIBLE VALUES IN DAIRY CATTLE	296
<i>Yuliat T., Romziah S., Nurhajati T., Wahjuni R.S, Hidanah S., Mirni L., Herman S</i>	
EFFECTIVENESS YELLOW JACKFRUIT LEAF EXTRACT (<i>ARCANGELISIA FLAVA MERR</i>) AS HEPATOPROTECTOR IN WHITE RAT (<i>RATTUS NOVERGICUS</i>)	299
<i>M. Gandul Atik Yuliani, Rentain Ginal Erin Nuraisa, Ferdi Antoni, Yanuar Prakosa, Luinta Pratama Kusuma</i>	
NATURAL SHAMPOO MADE FROM EXTRACT OF TREMBESI LEAF (<i>SAMANEA SAMAN</i>) AND WARU LEAF (<i>HIBISCUS TILIACEUS</i>) TO OVERCOME LICE ON GOATS	304
<i>M.P. Agung Bastian, Zainul Alim, Ririn Rohmawati, Indah Kartika S., Nur Muhammad E.I. and Agus Sunarso</i>	
✓ EFFECT OF NICOTINE ON SERUM MALONDIALDEHIDE (MDA) IN <i>RATTUS NOVERGICUS</i>	308
<i>Meitria Syahadatina Noor, H.M. Bakhriansyah, Widjiati, Budi Santoso</i>	
CROSS - SECTIONAL STUDY OF AEROBIC BACTERIA ISOLATED FROM THE CANINE VAGINA	311
<i>Wijaya Agus</i>	
ISOLATION AND CHARACTERIZATION OF LOCALLY ISOLATED RABIES VIRUS IN BALI	318
<i>I Wayan Masa Tenaya, E huh Rahardjo Djusa and I Ketut Diarmita</i>	



ENVIRONMENT DISHARMONY, OUTBREAK OF ECTOPARASITE ROVE BEETLE “TOMCAT” AND HOW TO CONTROL IT?	321
<i>Yunus, M.</i>	
PROGRESS OF RABIES ERADICATION PROGRAM IN BALI, FOLLOWING FIRST AND SECOND ISLAND-WIDE MASS VACCINATION	324
<i>Anak Agung Gde Putra, A.A.G. Smaraputra, N.M. Arsani, and I K. Diarmita</i>	
EXPLORATION OF MOSS (<i>BRYOPHYTA</i>) AS IMMUNOSTIMULATOR IN VITRO ACTIVITIES THROUGH THE MEASUREMENT OF THE CAPACITY OF CELLS AND PHAGOCYTOSIS CAPACITY OF HUMAN PBMCS.....	328
<i>Aristika Dinar Yanti, Andi Jayawardhana, Ulva Mukhtar Lutfi, Almaedawati Erina, Nayla Putri Suherman, Ahmad Brilyan Arafat, Ernisa Chumaidah, Dony Chrismanto, Bernie Julianto, Anieka Rohmah, Dygta, Febri, Fedik A. Rantam</i>	
POTENCY OF IMMUNOMODULATING ACTIVITIES INFUSA LEAF OF PLANT FROM THE PARK PEDESTAL PURWO BANYUWANGI ON HUMAN PBMCS CELLS IN VITRO.....	331
<i>Ernisa Chumaidah, Almaedawati Erina, Nailul Izzah, Rizki Arya Pradikta, Febri Kusumaning E.S., Andi Jayawardhana, Dony Chrismanto, Achmad B. Arafat, Aristika Dinar Yanti, Ulva Mohtar Lutfi, Berny Julianto, SNR Anieka Rochmah, Fedik A. Rantam</i>	
THE EFFECT OF VARIOUS DILUTER TOWARD POST-THAWING SPERMATOOZOA FRIESIAN HOLSTEIN’S MOTILITY, VIABILITY AND MEMBRANE INTEGRITY	335
<i>Dian Ayu Kartika Sari, Suherni Susilowati, and Ismudiono</i>	
DEXAMETHASONE INDUCE PROGESTERONE RECEPTOR-A AND ESTROGEN RECEPTOR-A EXPRESSION IN UTERINE STROMAL CELLS OF EWE DURING ABORTION	338
<i>Paul S. Poli</i>	

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EFFECT OF NICOTINE ON SERUM MALONDIALDEHIDE (MDA) IN RATTUS NOVERGICUS

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ABSTRACT

Indonesia was the third tobacco consumption country after China dan India. Girls who smoked in Indonesia was 4% dan women was 4,5%. Tobacco in cigarette had bad effects to health, and the major component of it was nicotine as pro-oxidant. This research was to know the effect of nicotine to serum MDA as indicator of oxidative stress. Design of this research was experimental with post test only control group design. Subjects consisted of 4 groups (40 rats) that were chosen homogeny and random. The groups were control (NaCMC), treatment dan groups that were injected by nicotine subcutaneous for 7 days. The doses were 21 mg/kgBW, 42 mg/kgBW dan 84 mg/kgBW. The observation was calculating MDA. The result of one way Anova was significant differences among all of the groups ($p < 0.05$). That analysis was continued by Tuckey HSD test. It showed significant differences between control and all of treatment groups ($p < 0.05$), 21 and 42 mg/kgBW with 84 mg/kgBW ($p < 0.05$), and 84 mg/kgBW with the other groups. The conclusion was nicotine could increase serum MDA in *Rattus novergicus*.

Keywords: nicotine, oxidative stress, serum MDA

INTRODUCTION

There were 1,3 trillion smokers in the world in 2003 based on WHO survey, and increased until 1,7 trillion in 2010. WHO estimates that there will be 1 trillion people die because of smoking in 21st century (Rabinoff *et al.*, 2007). Indonesia was the third tobacco consumption country after China and India. In Indonesia, the number of girls who smoke were 4% and women were 4,5% (FBI, 2009).

Cigarette will effect active and passive smoker (Fajriwan and Jusuf, 1990; Vasquez, 2008). Nicotine is the major component of cigarette because it contains for about 50% nicotine (Hukkanen *et al.*, 2005). Nicotine is an oxidant that can cause lipid peroxidation (Paszkowski, Clarke, Hornstein, 2002). The result of lipid peroxidation is MDA (Wood, Gibson, Garg, 2003).

MATERIALS AND METHODS

This research used experimental methode with post test only control group design. The samples were *Rattus novergicus* that were treated by nicotine injection of 21 mg/kgBW (Group 1), 42 mg/kgBW (Group 2) and 84 mg/kgBW (Group 3) based on Kakisina's research (2003) with converted dose, 7× mice dose (Kusumawati, 2004). The number of sample was 9/group (Kemas, 1991). To prevent mice died, the number was added until 11/group.

The procedure was started by making nicotine solution, giving treatment of nicotine, taking blood sample, making serum, and MDA examanation. Treatment was done after preparation of rats. Nicotine

was injected subcutaneous once a day for 7 days. Control group was injected by CMC-Na with the same way.

After 7 days of treatment, blood was taken and made serum. Procedure of MDA examination was 0.5 ml of serum + PBS solution 4.5 ml were centrifugated 3000 rpm for 15 minutes. 4 ml of supernatant was taken. It was added by TCA 15% 1 ml + 1 ml TBA 0.37% in HCl 0,25 N. It was heated in waterbath 80° C for 15 minutes, and then cooled it down in room temperature. After that, it was centrifugated 3000 rpm for 15 minutes and the supernatant absorbance was checked in 532 nm. MDA level in serum was known by using regression curve.

RESULTS AND DISCUSSION

Table 1. MDA level

NO	MDA level (µM)			
	CONTROL	P1 (21 mg/kgBW)	P2 (42 mg/kgbw)	P3 (84 mg/kgBW)
1	21	42	72	120
2	24	50	71	173
3	51	60	48	190
4	56	57	75	139
5	35	39	51	103
6	32	61	64	127
7	10	48	69	134
8	24	48	63	124
9	13	55	74	102
10	16	64	67	101
Mean	28.2	52.4	65.4	131.3

MDA level was analyzed by one way Anova 95%. The result of Anova test showed that $p = 0,000$ ($p < 0.05$). It meant there was significant differences of MDA level between control and treatment groups.

Nicotine as the major component of cigarette was an oxidant. It caused oxidative stress inside body. This condition happened because of imbalance of antioxidant and oxidant inside body. If oxidant was more dominant than antioxidant, it would cause oxidative stress. Oxidative stress was known by increasing of MDA level (Zenzes, 2000; Wood dkk., 2003; Chattopadhyay dan Chattopadhyay, 2008). Because of Anova test was significant, the analyzed was continued by Tuckey HSD test 95%. It was showed in Table 2.

Table 2. Tuckey HSD Test

	NaCMC	21 mg	42 mg	84 mg
NaCMC		0.02*	0.00*	0.00*
21 mg	0.02*		0.38	0.00*
42 mg	0.00*	0.38		0.00*
84 mg	0.00*	0.00*	0.00*	

Note: (*) showed significant differences

Table 2 showed that control was different with all of treatment groups. It meant that low dose had increase MDA level. Dose of 21 mg/kgBW was different with 84 mg/kgBW, but not different with 42 mg/kgBB. It showed that MDA level because of nicotine would increase and it was higher in high



dose. But medium dose of nicotine could not increase MDA level significantly. Dose of 84 mg/kgBW was different with all of groups because it was high dose that can increase MDA level significantly.

CONCLUSION

The conclusion was nicotine with 21, 42 and 84 mg/kgBW could increase MDA level in *Rattus norvegicus*.

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