

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)

FACULTY OF VETERINARY MEDICINE - UNIVERSITAS AIRLANGGA
I-MHERE SUB-COMPONENT B.2.C PERFORMANCE BASED CONTRACT



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International Seminar

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

19-20 June 2012

JW Marriott Hotel, Surabaya - Indonesia

**Dean of the Faculty of Veterinary Medicine
Universitas Airlangga,**

A handwritten signature in blue ink, appearing to read 'Romziah Sidik'.

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



INDONESIA-Managing Higher Education for Relevance and Efficiency
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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 economics, 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, Hasanudin University, 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 Rong 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' alamin, 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 School 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.

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HAEMOGREGARINE CASE IN PYTHON SNAKE

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ABSTRACT

One of 14 python snakes that obtained from the caretaker in Lamongan, East Java infected *Haemogregarine* identified. The presence of parasites can be identified by examination of thin blood with Giemsa staining. Gamont parasites shaped like a banana with dark blue nuclei with clear cytoplasm is bright pink. Gamont cytoplasmic pigment granules do not have a clear comparison with gamont *Haemoproteus* sp.

Keywords: *Haemogregarine*, haemoprotezoa, python snake, reptile

CASE DESCRIPTION

A total of 14 blood samples obtained from the python snake caretaker in Lamongan, East Java is used as samples. General morphology was obtained local python Java (*Python reticulatus*), 6 years old, the average size of between 1.10 m and weight 0.20 to 0.23 kg. The snakes showed no signs of illness. Snake bloods is taken from the jugular vein and performed on a blood thinner object glass and colored with Giemsa staining.

FINDING AND LABORATORY RESULTS

Review the results of blood under a microscope with a magnification of 1000X obtained *Haemogregarine* gamont form in erythrocytes. Gamont shaped like a banana with an elliptical nucleus and a dark blue colored with bright red cytoplasm. In the cytoplasm of the pigment granules are not visible. Gamont surrounds the nucleus of erythrocytes. Gamont can also founded in blood plasma. *Haemogregarine* gamont different from the usual attack *Haemoproteus* gamont reptiles and birds. In the cytoplasm of the pigment granules *Haemogregarine* not obtained while at *Haemoproteus* obtained. *Haemogregarine* gamont could not be identified between microgamet and makrogamet form. Possible forms can be distinguished by the color absorption in both the nucleus and cytoplasm. *Haemogregarine* gamont form can be seen in Figure 1.

DISCUSSION

Python is a snake among the largest snakes in the world. Python snake found in Asia, Africa, Australia, New Guinea. Python snake most often found in the tropics (Green *et al.*, 2009), including Indonesia. In Java, Indonesia, Python species is local Python called *P. reticulatus*. Green *et al.* (2009) reported that python snake habit in areas near water, where the damp and the trees. Python snakes are predators such as snakes in general, non-venomous and kill their prey with a body coil

Hemogregarine are intracellular parasites in the blood of reptiles including snakes. *Haemogregarine* cases have been reported in reptiles, but cases in particular python in Indonesia has never been reported. The results of examination of 14 blood samples examined snake, a snake blood samples found *Haemogregarine* gamont stadium. This case reinforces the other cases reported by Gomathinyagam

et al. (2008) who reported on a rat snake Haemogregarine infection (*Ptyas mucosus*). Gamont shaped like a banana wrapped around a core of erythrocyte.

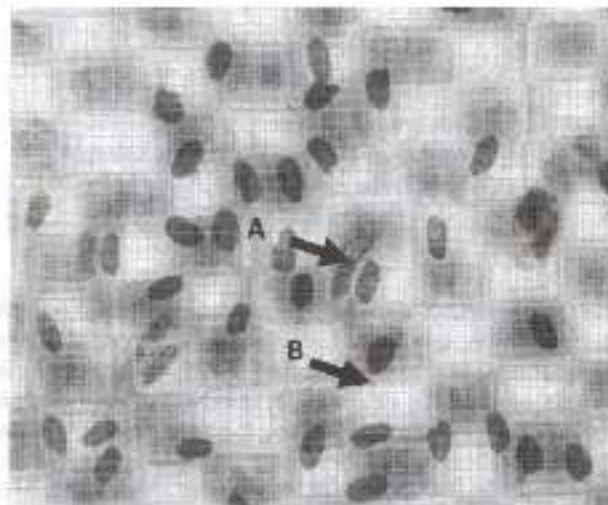


Figure 1. Haemogregarine from python snake. A. trophozoite, B. gamont

Haemogregarine transmission through the bite of blood-sucking arthropod vectors including. Fowler and Miller (2003) said that the reptile or amphibian Haemogregarine spread of blood-sucking vectors. At the snakes are often identified Haemogregarine is Hepatozoon. In the crocodile, the species that infects Haemogregarine is *H. crocodilorum* are leeches and arthropods are the intermediate hosts (vectors). Mader (2005) reported that hemoparasite including Haemogregarine have an indirect life cycle through a vector. Most are arthropod-transmitted, at least in the terrestrial reptiles. Some of the blood parasites of aquatic blood parasites are transmitted by leeches. Most hemoparasites are intracellular, extracellular remains but one genus and is found free in the plasma. Most of these are not considered to be pathogens even though. They are killing cells in circulation. The genera most commonly found are Plasmodium, Haemoproteus, Haemogregarina, Hepatozoon, and Trypanosoma, and the remainder are minor players include Schellackia, Lamkesterella, Fullisia, and Saurocytozoon.

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REFERENCES

- Fowler ME, Miler RE. 2003. Zoo and wild animal medicine. 5th ed. Elsevier Science. United State of America.
- Gomathinyagam S, Jayathangaraj MG, Raman M, Bhakyalakshmi V, Senthilkumar KS. 2008. Prevalence of Haemogregarine species in a rat snake (*Ptyas mucosus*). *Indian J. Anim. Res.*, 42 (1): 77-78.
- Green J, Spilsbury R, Taylor B. 2009. Exploring the world of reptiles and amphibians. Chelsea House Publisher. New York, USA.
- Mader D. 2005. 2 ed. Reptile medicine and surgery. 2 ed. Elsevier Saunders. United State of America.
- Roca V, Galdo MA. 2010. Haemogregarine blood parasites in the lizards *Podarcis bocagei* (Seoane) and *P. carbonelli* (Pérez-Mellado) (Sauria: Lacertidae) from NW Portugal. *Syst Parasitol*, 75:75-79.

