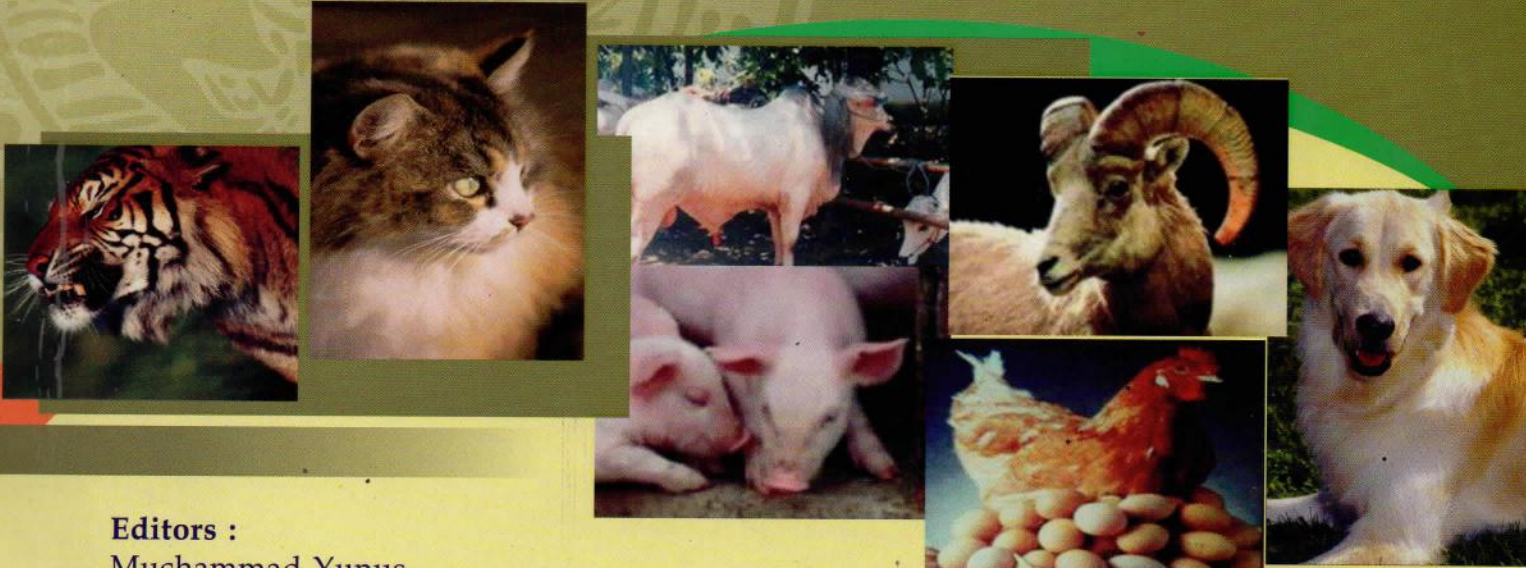


**MANAGEMENT STRATEGY OF ANIMAL HEALTH AND  
PRODUCTION CONTROL ON ANTICIPATION GLOBAL  
WARMING FOR ACHIEVEMENT OF MILLENNIUM  
DEVELOPMENT GOALS**



**Editors :**

Muchammad Yunus  
Suzanita Utama  
Paridjata Westra  
Lilik Maslachah  
Epy Muhammad Luqman  
Boedi Setiawan  
Sri Hidanah

**COLLABORATION OF :**

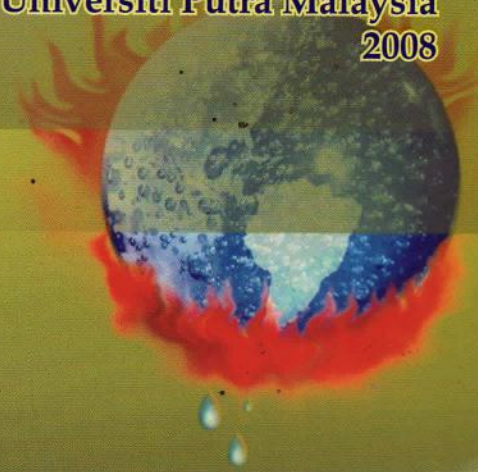


FACULTY OF VETERINARY MEDICINE  
AIRLANGGA UNIVERSITY



FACULTY OF VETERINARY MEDICINE  
UNIVERSITY PUTRA MALAYSIA

**Faculty of Veterinary Medicine  
Airlangga University  
and  
Faculty of Veterinary Medicine  
Universiti Putra Malaysia  
2008**





*Collaboration between*  
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## CERTIFICATE

*this is to certify that*

***Tatik Hernawati, M.Si., Drh.***  
-----

*has participated in*

**International Seminar**  
***Management Strategies on Animal Health***  
***and Production Control***  
***in The Anticipation of Global Warming***  
***for The Achievement of Millennium Development Goals***

**As**

***speaker***  
-----

***3<sup>th</sup> - 4<sup>th</sup> June, 2008, Surabaya - Indonesia***



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2008**

**PENERBIT DANI ABADI  
Surabaya**

Cetakan pertama 2008

**Hak Cipta dilindungi Undang-undang.**

## REPORT OF ORGANIZING COMMITTEE

Global warming is creating a threat of disaster in animal husbandry sector in the form of decreasing livestock productivity. From the aspect of animal health global warming has the opportunity to change the character of the existing diseases agent. It is possible that a mutation occurs and causes microorganisms those are normally non-infectious becomes infectious. On the other hand global warming has indirect impact on livestock feed industry. Further impact of global warming causes the availability of animal derived food products decrease and eventually affect human life due to the lack of animal derived food material supply qualitatively and quantitatively. One of the efforts solves the problem is with the performed International Seminar entitled "The Management Strategies of Animal Health and Production Control in the Anticipation of Global Warming for the Achievement of Millennium Development Goals" at 3-4 June 2008 in ELMI Hotel Surabaya. Ideas on the process and steps need to be taken to overcome the impact and to anticipate global warming presented in the International Seminar were compiled into this proceeding. It is expected that this proceeding could help in solving and anticipating global warming to achieve millennium development goals. Thank you is directed to all who participated in the International Seminar, especially the oral as well as the poster presenters.

Surabaya, 20 June 2008

Chairman of the committee  
Dr. Koesnoto Supranianondo MS., Drh.

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**PROFILE OF SPERM IN CAPACITATING EARLE'S BALANCED SALT SOLUTION (EBSS) MEDIUM BY SUPPLEMENTED HEPARIN AND HYPOTAURINE IN FERTILIZATION IN VITRO OF DAIRY BULL**

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**ABSTRACT**

The study has investigated the addition of heparin and hypotaurine in capacitating medium Earle's Balanced Salt Solution (EBSS). Fresh dairy bull semen was used for capacitating, life of sperm and motility of sperm percentage were calculated. Result of this experiment concluded that life of sperm percentage and motility of sperm percentage increased after 2 hours capacitating in EBSS medium contains heparin and hypotaurine.

Key words: heparin, hypotaurine and capacitating of sperm.

**INTRODUCTION**

Technique of fertilization in vitro at bull have been found and developed, thereby produce of bull embryo outside content bigly in this time enabled (Margawati, 1995). According to Triwulaningsih (1992), fertilization in vitro is one of the techniques for production of embryo with quickly and cheap, because this technique needn't donor its costly price.

On the fertilization in vitro process, obtained oocyte direct of ovary either through laparoscopy and gathering of ovary from home cut animal cannot be direct fertilized by spermatozoa before oocyte matured by in vitro so also with spermatozoa. Starting from breakdown of above needing presumably checked profile of spermatozoa by supplemented of heparin and hypotaurine in capacitating medium of EBSS

**MATERIALS AND METHODS**

Collection of semen was performed dairy bull by artificial vagina. And then samples divided into 3 groups consist of EBSS + heparin medium, EBSS + hypotaurin medium and without heparin and hypotaurine (control group).

Fresh semen 0.25 cc supplemented EBSS 3 cc and then centrifuged for 10 minutes by velocity 1800 rpm. Next, pellet is washed twice by EBSS and then kept in the incubator CO<sub>2</sub> 5% on 38.5°C for 30 minutes. Next, capacitating done by supplemented each medium with 1x10<sup>6</sup>/40 cc sperms, and then equilibrated and capacitating each for 2 hours

in incubator. The evaluated of profile of sperm after done capacitating including life and motility of sperm. Analysis of result by one way Analysis of variant and then continued by LSD test (Steel and Torrie, 1989).

**RESULTS AND DISCUSSION**

The mean of percentage of motility and viability of sperm after capacitating for 2 hours on EBSS + heparin, EBSS + hypotaurin, EBSS + heparin + hypotaurine and EBSS only medium.

The result to show that supplemented by heparin or hypotaurine can increase of percentage of life and motility of sperm. In the reality combination of heparin and hypotaurine is far better compared to only supplemented heparin or hypotaurine. Media which is used in this research not only rich with mineral example calcium, kalium, magnesium, glucose, sodium, BSA and but also piruvate.

According to Hafez (2000), reaction of acrosome need calcium ion. Capacitating and acrosome reaction of sperm are quick in containing media of serum of albumin in the form of BSA and existence of ions of calcium. Heparin assists capacitating of sperm that is with existence of sulphate residue able to remove factor of de-capacitating coherent at plasma membrane like protein binding calmodulin, thereby calcium enter into cell which is needed to capacitating. By in vivo hypotaurine can look after and stimulate of capacitating motility and acrosome reaction (Meizel, 1980). According to Gordon (1994),

Table 1. Percentage of life of sperm on EBSS + heparin, EBSS + hypotaurine, EBSS + heparin + hypotaurine and EBSS medium for 2 hours.

Medium	X ± SD	Range
EBSS + heparin	81.02 ± 1.53 a	78 - 83
EBSS + hypotaurin	80.93 ± 1.03 a	78 - 82
EBSS + heparin + hypotaurin	86.67 ± 0.61 b	85 - 87
EBSS	77.43 ± 2.68 c	73 - 82

Notation at differences column to showing a marked differences (p<0.05)

Table 2. Percentage of motility of sperm on EBSS + heparin, EBSS + hypotaurin, EBSS + heparin + hypotaurin and EBSS medium for 2 hours.

Medium	X ± SD	Range
EBSS + heparin	79.05 ± 1.49 a	76 - 82
EBSS + hypotaurin	79.04 ± 1.76 a	75 - 81
EBSS + heparin + hypotaurin	84.89 ± 1.58 b	82 - 86
EBSS	73.46 ± 1.80 c	71 - 76

Notation at differences column to showing a marked differences (p<0.05)

Guerin and Menezo (1995), Hypotaurine represent the source of beta acid of amino naturally reside in plasma of seminal plasma and dilution of oviduct. This compound is important for the life, capacitating of sperm and fertilization process and also and also growth of embryo compound is important for the life of capacitating spermatozoa, process and also growth of embryo. According to biochemistry of structure, hypotaurin containing of sulphate salt, thereby its influence in course of possibility capacitating almost the same to with heparin. Besides that hypotaurin also work as antioxidant.

### CONCLUSION

The concluded of this research was the percentage of life and motility of sperm can increasing after 2 hours capacitating in EBSS medium which containing heparin, hypotaurine and combination of heparin and hypotaurine. Supplemented by combination of heparin and hypotaurine is best.

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